

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.

- Carbon Farmers- For a grazing and agricultural perspective:

<http://www.carbonfarmersofamerica.com/solutions.htm>

Allan Savory argued that while livestock may be part of the problem, they can also be an important part of the solution. This Festa Lecture was recorded 7 November 2009, Trinity College Dublin, Ireland. <http://vimeo.com/8239427>

- 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>

- A new paper from Dr. Christine Jones (above Australian author)

<http://soilcarboncoalition.org/files/JONES-Carbon-that-counts-20Mar11.pdf>

Biochar and integrated farming in Germany: the cascading use of biochar in livestock farming and fertilizer management, in both of which particular use is made of biochar’s high adsorption capacity.

<http://www.ithaka-journal.net/pflanzenkohle-eine-schlusstechnologie-zur-schliesung-der-stoffkreislaufe?lang=en>

More information/Resources:

- 9 minute overview piece with Albert Bates, author of: The Biochar Solution, a great introduction.

<http://www.youtube.com/watch?v=KPOcPwxrUqQ>

- Yahoo.com has 2+ biochar list serves that often feature cutting edge science, discussion and current information. *The “regular” group at:* tech.groups.yahoo.com/group/biochar and the soils group at: tech.groups.yahoo.com/group/biochar-soils

More Resources:

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

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

- **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>

- **World Stove**- <http://worldstove.com> is a very progressive international nonprofit that manufactures and sells cookstoves that are carbon negative, helping with deforestation, air quality, agricultural productivity and water quality.

- **An excellent overview with a lot of links and information on biochar and it's potential:** <http://www.greaterdemocracy.org/wp-content/uploads/2009/07/biochar-notes-1181.pdf>

- **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>

Info about biochar making with designed open fires:

http://www.biochar-international.org/profile/Tierra_Learning_Center

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