



April 2011 News from the International Biochar Initiative

27 April 2011

Upgrading IBI's Communications Network to Better Serve our Members

One of IBI's main goals is connecting people in the biochar world and providing them correct and up to date information on all things biochar. IBI staff spend a good deal of time answering emails; talking on the phone with biochar producers, enthusiasts, users, marketers, researchers, etc; posting updates on our website; connecting individuals; researching new products and field trials; and working to stay current on biochar research.

We are in the process of upgrading our membership system to provide more direct services to our IBI members to better connect individuals and provide information. This new system will launch in the next two months and will allow people to find one another more easily based on interests. We will use this member system to identify the most important content for the IBI website and materials. This new system will also provide members with a member's only (log in required) section of the website where they can recommend articles, post updates, add content to their profiles, and access other information available only to members. We look forward to releasing this new benefit and thank the entire IBI network for the feedback we have received to date.

If you are not a current member and wish to take advantage of these new benefits, [please consider joining IBI](#).

Profile: Carbon Gold: Working with Cacao Farmers in Belize to Create a Rotating Biochar Production and Utilization System

Cacao beans are the beginning of chocolate; cacao is the name for the bean before it is fermented for five days (usually under banana leaves), dried in the sun, and processed into cocoa powder. Cacao trees are grown around the world in tropical climates and most of the chocolate produced in the world comes from West Africa (mainly the Ivory Coast) and Central America. These crops are amongst the most highly sprayed food crops in the world and are often produced in plantation style. However, there are also FairTrade and organic chocolate producers using natural, shade grown sustainable farming methods with no pesticides.



Carbon Gold, a company based in the UK, is taking sustainable farming one step further and is partnering with the Toledo Cacao Growers Association (TCGA) in Belize to add biochar to trees as a soil amendment. The initial drivers of this project are encouraging cacao farmers to prune their trees (to increase yield and reduce the instances of airborne fungi), investigating opportunities to provide nutrients to the soil organically, and offsetting some of the carbon emissions from annual operational emissions. Kraft is purchasing the carbon as a payment to farmers to use biochar.

For the remainder of this story, please see:
<http://www.biochar-international.org/carbongold>

Photo: A 2.5 year old cacao tree producing fruits (pods) as part of the biochar crop trials (top dressing of biochar 18 months ago). Most Belizean cacao farmers have to wait between 5 and 7 years before their trees start producing pods; photo courtesy of Carbon Gold.

Insights into the Development of the Massachusetts (United States) Requirements for Installation and Operation of Biochar/Charcoal Production Units

By Hugh McLaughlin, PhD, PE, Member of the NESFI Board

The New England Small Farm Institute (NESFI) is a non-profit organization located on state property in Belchertown, MA. Working in collaboration with the Pioneer Valley Biochar Initiative (PVBI), NESFI conducted a small, randomized split-block field trial in the summer of 2008 utilizing biochar as a soil amendment for growing tomatoes. Although the results were mixed, the group was intrigued enough by the promise of biochar that they planned a subsequent larger trial for 2009.

In spring 2009, NESFI/PVBI approached the Joseph Gnazzo Company, Inc., successor to the now defunct Connecticut Charcoal Company (CCC), seeking permission to access a 90 cubic yard pile of weathered, lump charcoal fines stored on their Union, CT site for use in a biochar field trial. Anticipating that the Commonwealth of Massachusetts Department of Environmental Protection (MassDEP)/Solid Waste branch would be concerned with the potential land application of an undocumented "soil amendment", the team interviewed Mr. Paul Rizner, former collier for the CCC, to determine and document the feedstock utilized for production of the char. Rizner provided a notarized affidavit that the charcoal had been produced solely from clean hardwood slabs. The NESFI/PVBI team additionally arranged for laboratory analysis of the char by Con-Test Analytical Laboratory, which found the char to be free from toxins and appropriate for soil application.

Concurrent with setting up the field trials and testing the biochar, NESFI initiated a dialogue with the Massachusetts Department of Environmental Protection (MassDEP) to determine the regulatory requirements applicable to the use and production of biochar in Massachusetts. Based on the results of the lab analysis of the biochar, MassDEP provided a formal letter of determination, "allow[ing] NESFI to conduct a demonstration activity involving the ninety (90) yards of biochar that remain from the CCC production activities, subject to conditions..." that included submittal of an evaluation plan and reports. To read the remainder of this article and see the full document, go to: <http://www.biochar-international.org/MassDEP>.

Biochar Briefs - News Roundup for April 2011

We update the website daily with new articles on biochar. For more information, please see: <http://www.biochar-international.org/newsbriefs>

[Kelby Fite, Ph.D., a soil scientist with Bartlett Tree Experts](#), is working with the Morton Arboretum in Chicago, United States, to test the effects of biochar on urban street trees.

[A radio interview on the ABC Science Show with Australian biochar researchers](#) at the NSW Department of Primary Industry describes biochar use in coffee plantations and other research projects.

[Researchers at the Tamworth Agricultural Institute have found the use of biochar](#) has the potential to improve water use efficiency in pastures. Plots which incorporated biochar at a rate of ten tons per hectare were up to 17 per cent more water efficient than those without biochar.

[Art Donnelly of the Seattle-based SeaChar biochar group](#) visited DePauw University in Indiana, USA to teach students how to make small biochar-making stoves out of tin cans. The workshop was part of Earth Week activities at the school. Donnelly had met the DePauw students when they did service work for SeaChar's Estufa Finca project in Costa Rica, constructing biochar stoves for migrant coffee pickers.

[IBI Member Wayne Wadsworth is profiled for his permaculture work using biochar](#) in Australia and many other countries. Wadsworth is experimenting with ways to make biochar and recover the energy from pyrolysis gases as a substitute for unsustainable hydrocarbons.

[IBI Member Jim Karnofski and his wife Vera are making biochar in their woodstove](#) with a simple device and using it in their gardens in Washington state, USA. Their inspirations include Maria Rodale, Rattan Lal, and the traditional sustainable agricultural practices of China and Korea.

[Researcher and IBI Member Veli Pohjonen has a vision for the Finnish energy grid:](#) a climate mitigation strategy that would add syngas produced from farm and forestry waste to the natural gas pipeline network with a biochar co-product. Adding biochar back into fields would increase biomass production and the associated carbon credits would provide another revenue stream to farmers.

[Three motorcycle enthusiasts are on a 19-day, 6,600-kilometer motorcycle tour](#) through the Philippines to promote rural solar electrification. The Ride for Light 2011 will be carbon negative with the purchase of four biochar stickers equivalent to four metric tons of carbon sequestered.

[Dr Paul Taylor, editor of the book, Biochar Revolution](#), is featured in this article in the Northern Rivers Echo. Taylor will be a guest speaker at a biochar education camp from April 30 to May 4 in northern New South Wales, Australia.

[Dr David Crowley from the University of California, Riverside, USA](#), gave a presentation on biochar for sustainable agriculture at the University of Gujrat in Pakistan. As a result, a Pakistan Biochar Initiative is being formed.

[Colorado Ski Country USA \(CSCUSA\) resorts](#) are highlighting good environmental practices including the use of biochar for constructing terrain features on the ski slopes at Purgatory.

[Native seed expert Gary Paul Nabhan is sequestering carbon](#) on his land in the Arizona high desert (United States) using native plants and biochar. He says it is important to keep planting, even in the face of extreme drought, frost, and climate uncertainty.

[Four companies from Brome-Missisquoi are finalists](#) in a competition in Quebec, Canada, including the company Bromont Biochar Generation, which specializes in processing organic waste by pyrolysis. These companies will share more than \$6,000 in prize money.

[The Farmers Club in the UK has awarded travel money to Dr Ruben Sakrabani](#) of Cranfield University to investigate conversion of manure to biochar in Malawi.

Alcoa of Australia has joined with Greening Australia in a three year project to re-vegetate large areas of cleared land using biochar and native species. Employees of Portland Aluminum are volunteering their labor for the Victorian sustainable landscape research project.

Curtin University's Fuels and Energy Technology Institute is halfway through a three year, \$4.7 million research project directed by Professor Chun-Zhu Li that produces bio-oil and biochar from mallee trees.

Nearly 100 people gathered in St. Regis, Montana, USA for the Biomass to Biochar Symposium. The presentations are now available online at <http://www.TheMontanaChallenge.net>

The US Department of Agriculture awarded research grants to spur production of bioenergy and bio-based products that will lead to the development of sustainable regional systems and help create jobs. South Dakota State University will receive just under \$600,000 to develop carbon activation technologies for biochar products.

Dr. Monika Krüger, professor at the University of Leipzig, Germany, will coordinate research into turning sewage sludge into "Terra Preta". The process will destroy toxins and pathogenic microorganisms in the sewage sludge.

The biomass gasification system at the Harvey County landfill, in Kansas, USA will be upgraded and used to produce a large amount of biochar for collaborative research efforts with Kansas State University and Iowa State University. Various biomass-derived feedstocks such as woodchips, corn stover, and milo stalks will be used.

A coffee grower in New South Wales, Australia is starting to see some results from biochar research on his plantation. Jos Webber says the trees without compost or biochar aren't performing as well as the rest of the crop.

Meghana Rao, 15, in grade 9 from Jesuit High School in Beaverton, Oregon, qualified for the Intel International Science and Engineering Fair with a project titled, "Biochar Carbon Sequestration: A Study on the Effects of Temperature and Methods of Production on the Stability of Different Chars."

Researchers at the Fraser Experimental Forest and the Rocky Mountain Research Station in Fort Collins, Colorado, USA are applying biochar to a variety of soils in varying conditions throughout the Experimental Forest, where its effects will be evaluated over the next few years.

Opportunities in Biochar

Opportunities in Biochar showcases announcements for the public to apply for funding, jobs, publications, conferences, etc. These announcements are also posted on the IBI website in two places: [Biochar Updates](#) and the [Member Bulletin Board](#).

Grant Opportunity for US Projects: The U.S. Department of Agriculture and the U.S. Department of Energy request proposals for the Biomass Research and Development Initiative. Projects must integrate the following technical areas: Feedstocks development; Biofuels and bio-based products development; and Biofuels and bio-based products development analysis. **Pre-applications are due May 31**; for more information see: <http://www.biochar-international.org/node/2441>.

Submit Abstract for Conference: The 2nd Asia Pacific Biochar Conference 2011 in Kyoto, Japan (APBC KYOTO 2011) will be held September 15 – 18, 2011 and is inviting abstracts on the themes of:

- Education and diffusion methods of carbon sequestration by biochar

- The impacts of applying biochar to agriculture and forest soils
- Steps in the commercialization of biochar: lessons from the region

All abstracts must be submitted electronically through the interface on the APBC KYOTO 2011 homepage: <http://apbc2011.com>; **Abstracts due May 15th.**

Submit Abstract for Conference: The Society for Ecological Restoration Conference will be held in Merida, Mexico August 21-25. Abstracts for presentations **accepted until May 15th.** The conference will focus on re-establishing the Link between Nature and Culture. SER2011 will be an important forum for addressing the global challenges of biodiversity and habitat loss, climate change, and sustainable development. More information <http://www.ser2011.org/en>.

New job opportunities and PhD postings are updated at:
<http://www.biochar-international.org/network/jobs>

Upcoming Calendar Events

April 30 – May 5: Biochar Hands on Education Camp; location: NSW, Australia; more information <http://www.biochar-international.org/node/2353>.

May 2 – 5: International BIOMASS Conference & Expo; Location St. Louis, Missouri, United States; more information www.biomassconference.com.

May 15 –16: GHG Reduction Summit; Location Alberta, Canada; more information www.ghgreductionsummit.com.

May 24: The UK Biochar Research Centre (UKBRC) will unveil a pilot-scale "specified biochar" production unit in Edinburgh (UK). Participants will have the opportunity to visit the unique pilot-scale unit dedicated to biochar production research and capable of producing "specified biochar" from diverse materials under a wide range of conditions. For more information on the unit or the opening ceremony contact Dr. Ondrej Masek at ondrej.masek@ed.ac.uk.

May 25 – 26: UK Biochar Research Centre 3rd Annual Conference; Location Edinburgh, UK; more information <http://www.biochar-international.org/node/2355>.

June 6 – 10: 19th European Biomass Conference and Exhibition: From Research to Industry and Markets; Location Berlin, Germany; more information www.conference-biomass.com.

June 17 – 19: Gasification and Biochar Workshop at ALL Power Labs; Location Berkeley CA, US; more information <http://www.gekgasifier.com/about/workshop>.

June 23: Opportunities for Carbon Sequestration and Mine Site Rehabilitation in the Mining and Metals Industries Using Biochar; Location NSW, Australia; more information <http://www.biochar-international.org/node/2443>.

See the [IBI Calendar page](#) for more events. To add an event to the calendar, send the information to info@biochar-international.org.

Regional Biochar Group Updates

To read more on regional and national biochar groups, please see IBI's website at: www.biochar-international.org/network/communities. This month features updates from the South West Victoria Biochar Action Group (Australia), the Illinois Biochar Group (United States), and the Pioneer Valley Biochar Initiative (United States).

The South West Victoria Biochar Action Group, Australia

The South West Victoria Biochar Action Group (SWVBAG) is an open forum of like-minded

persons and organizations, with the aim of investigating the technology related to and use of biochar and associated energy products in the region. Members of SWVBAG are taking part in a new project to propagate native plants with biochar. The Victorian Department of Sustainability and Environment and Greening Australia Victoria will jointly investigate the potential benefits of using biochar to assist in the propagation of currently difficult to germinate Australian native plant species. The project is using biochar for propagation at different percentage levels and comparing that to smoke water treatments and standard practice growing media. Two nurseries in the area will run parallel trials to monitor germination responses and ongoing seedling root development to determine if biochar is a beneficial additive. For more information, please see: <http://www.swvicbiochar.org.au>.

Illinois Biochar Group, United States

The Illinois Biochar Group will have a regional meeting Thursday, June 9th at the Illinois Sustainable Technology Center (ISTC) on the campus of the University of Illinois at Urbana-Champaign (from 10 am to 1 pm) with speakers providing updates on work/research/activities with biochar and then time for discussion. Speakers will include Dr. Wei Zheng and Dr. B.K. Sharma from ISTC as well as Dr. Krishna Reddy from UI-Chicago—all will detail their on-going biochar research; Dr. Paul Anderson will talk about his work on biochar stoves; Paul Wever from Chip Energy will give a demonstration of a new stove; and Dr. Kurt Spokas from USDA-ARS in St. Paul will give a presentation on his research on biochar/soil properties. Anyone interested is welcome to attend and/or join the Illinois Biochar Group. For more information, please contact Nancy Holm (nholm@istc.illinois.edu).

The Pioneer Valley Biochar Initiative (PVBI), Massachusetts, United States

A recent seminar series highlighting biochar, energy issues, biomass and agriculture, conducted jointly with the UMass Center for Agriculture, is nearing completion with a continued attendance of 30 - 40 including an appreciable number of students. A "Demonstration Day" will be held April 28th with biochar making equipment demonstrated at the UMass campus. Additionally, there is a proposal for offering an on-line course in biochar/agriculture/climate change which has been submitted to the UMass Center for Public Policy Administration (CPPA) to be offered for University credit through its continuing education program. World Scientific recently published "The Energy Problem" by PVBI member Dick Stein and a former student. For more information, please see: <http://pvbiochar.org>.

Recently Published Biochar Research

IBI tracks all published research on biochar and includes it in our online bibliography: www.biochar-international.org/biblio. The following articles were added in the last month. Please visit the website bibliography for more information on any of these articles. Due to copyright, we cannot provide full copies of articles unless we have permission from the publisher. If you have published work that is not included, please email us at: info@biochar-international.org.

Bakshi, Santanu (2011). Biogeochemistry of the immobilization of Cu (II) by the addition of biochar in soil. Paper for Biogeochemistry of Trace Metals Program, Soil and Water Science Department, University of Florida. Pages 1 – 11.

Bradley, David (2011). The Forgotten Greenhouse Gas. Journal of Physical Chemistry.

Dong, Xiaoling, Ma Lena Q., Gao Bing, and Li Yuncong (2011). Characteristics and mechanisms of hexavalent chromium removal by biochar from sugar beet tailing. Journal of Hazardous Materials. 04/2011.

Elmer, Wade H. Ph.D, and Pignatello Dr. Joseph (2011). Effect of biochar amendment on mycorrhizal associations and Fusarium crown and root rot of asparagus in replant soils. Plant Disease. 04/2011.

Fellet, G., Marchiol L., Vedove Delle, and Peressotti A. (2011). Application of biochar on mine tailings: Effects and perspectives for land reclamation. *Chemosphere*. 04/2011.

Hammond, Jim, Shackley Simon, Sohi Saran, and Brownsort Peter (2011). Prospective life cycle carbon abatement for pyrolysis biochar systems in the UK. *Energy Policy*, 03/2011.

Kammann, Claudia Irene, Linsel Sebastian, Gößling Johannes W., and Koyro Hans-Werner (2011). Influence of biochar on drought tolerance of *Chenopodium quinoa* Willd and on soil-plant relations. *Plant and Soil*. 04/2011.

Karami, Nadia, Clemente Rafael, Moreno-Jiménez Eduardo, Lepp Nicholas, and Beesley Luke (2011). Efficiency of green waste compost and biochar soil amendments for reducing lead and copper mobility and uptake to ryegrass. *Journal of Hazardous Materials*. 04/2011.

Lee, Sung Eun, Ahmad Mahtab, Usman Adel A. R. A., Awad Yasser M., Min Sun Hong, Yang Jae E., Lee Sang Soo, and Ok Yong Sik (2011). Effects of Biochar on Soil Quality and Heavy Metal Availability in a Military Shooting Range Soil in Korea. 03/2011. Publication Unknown. p.67-77.

Mankasingh, Utra, Choi Poon-Chung, and Ragnarsdottir Vala (2011). Biochar application in a tropical, agricultural region: a plot scale study in Tamil Nadu, India. *Applied Geochemistry*. 03/2011.

Nelson, Nathan O., Agudelo Sandra C., Yuan Wenqiao, and Gan Jing (2011). Nitrogen and Phosphorus Availability in Biochar-Amended Soils. *Soil Science*. 03/2011.

Uzoma, K. C., Inoue M., Andry H., Fujimaki H., Zahoor A., and Nishihara E. (2011). Effect of cow manure biochar on maize productivity under sandy soil condition. *Soil Use and Management*. 04/2011.

Whitman, Thea, Nicholson Charles F., Torres Dorisel, and Lehmann Johannes (2011). Climate Change Impact of Biochar Cook Stoves in Western Kenyan Farm Households: System Dynamics Model Analysis. *Environmental Science and Technology*. 04/2011.

Yao, Ying, Gao Bin, Inyang Mandu, Zimmerman Andrew R., Cao Xinde, Pullammanappallil Pratap, and Yang Liuyan (2011). Biochar Derived from Anaerobically Digested Sugar Beet Tailings: Characterization and Phosphate Removal Potential. *Bioresource Technology*. 03/2011.