



March 2011 News from the International Biochar Initiative

29 March 2011

Upgrading IBI's Communications Network

IBI's website and member network is going through changes! We are upgrading our website and over the next few months will be adding new information and pages to the website. In addition, we are moving our member and network database to a new provider which will give us many new benefits to ease communications and information exchange among our supporters. Some of the benefits include an expanded search directory of all people in the IBI network with expanded profiles for IBI members, an IBI member login section of the website which will contain members-only information and networking options, an online biochar marketplace, new business memberships, and the ability to directly search for and contact members working around the world in specific fields. We appreciate all the suggestions and feedback for content improvement we have received and look forward to unveiling this new service in the coming months.

IBI Biochar Online Marketplace Survey

As part of IBI's upgraded membership program, we are developing an Online Biochar Marketplace where IBI members can offer products and services for sale. Last month we invited members of the greater IBI network to take a short survey to gauge the interest in this service from both sellers and potential buyers. The response was very positive, with 70% agreeing that an Online Marketplace would be very helpful. We were also able to get a sense of how many people are interested in different products and services. The results are presented in the table below (numbers indicate interest in each product/service). [Click here for a full report of the survey.](#)

Update on IBI's Characterization Standards

IBI's initiative to create globally-developed and accepted standards for biochar characterization, production and utilization has completed the most recent round of working group discussions. The working groups received valuable feedback from the larger biochar community and they are continuing to determine appropriate test methodologies for physical biochar properties and potential toxins based on existing soil quality and soil amendment analytical tests. The working groups are now assessing the potential utilization of existing standardized classification and testing procedures for soil amendments such as compost and fertilizers to determine the most appropriate threshold reporting levels for toxicity and physical biochar properties. Standards and test methodology selection has focused on three key elements: biochar-appropriate tests, global applicability, and test accessibility. Discussions

held during February and March resulted in the conclusion that Material Safety Data Sheet development will likely become an important part of biochar product labeling for safe transportation, trade, and handling.

The end product of this effort is the establishment of biochar standards developed in a global, transparent, scientifically-based process. The goal in this particular phase of the work is to produce a universally developed characterization and standards document that any of the IBI members or member organizations can utilize as a basis for governmental and third-party certification agencies to develop national biochar standards. IBI will be developing its own biochar material certification program based on these standards. The second version of the standards draft and all other updates are available at:
<http://www.biochar-international.org/characterizationstandard>.

We welcome all comments and suggestions from the biochar community as we proceed with development of these critical standards. An additional public comment period will be established when the standards have been completed, and prior to publication, as well.

Profile: Developing Biochar Research and Production Capabilities in Ghana

When Ghanaian researcher Edward Yeboah was introduced to biochar, his first reaction was that it might go a long way to address the poor soil health situation in Ghana. This was in 2006 while he was working at Dr. Johannes Lehmann's Lab Group as a Visiting Scientist at Cornell University, US. Edward also met Dr. Saran Sohi, currently of the UK Biochar Research Center, in 2006 and they started a working collaboration in biochar. A year later, Edward won an African Fellowship Programme Award supported by the Gatsby Foundation and traveled to the UK to spend one year working with Dr. Sohi at Rothamsted Research, in Harpenden, UK where they studied density fractionation approaches to understand soil organic matter dynamics in soils.



Upon his return to Ghana, Edward introduced biochar to the research community through his colleagues at the Council for Scientific and Industrial Research Soil Research Institute (CSIR-Soil Research Institute). In collaboration with CSIR-Crops Research Institute, Kwadaso, they installed an initial field trial to study biochar. In 2008, Dr. Sohi and Edward got support from the Royal Society-Leverhulme Trust, UK under the Ghana/Tanzania-UK Fellowship for Dr. Sohi to conduct an exploratory visit to Ghana. The interest in biochar that was instilled in the research community during that initial visit has taken off and now a number of institutions and researchers in Ghana are working on biochar.

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

Photo: Okra field trials with biochar; courtesy of Edward Yeboah.

Biochar in Japan: Announcing the 2nd Asia Pacific Biochar Conference

The entire staff and board of IBI send our support to our Japanese colleagues in this time of devastation caused by the earthquake and tsunami.

TOWARDS HUMAN AND ENVIRONMENTAL SYMBIOSIS USING BIOCHAR
APBC KYOTO 2011
ASIA PACIFIC BIOCHAR CONFERENCE

Japan has taken a leading role as a biochar pioneer and has a great deal of experience building on a long tradition of biochar use to develop modern methods over the last thirty years—a governmental act officially acknowledged charcoal as a soil ameliorator back in 1988. Our colleagues in Japan have conducted a number of biochar field trials with crops and trees, have conducted important lab research on biochar, have created the “Cool Vegetables” campaign to support the use of biochar in crops, and have published a large amount of data on all of this work. Additionally, Japan is home to what is likely the largest biochar production unit currently in operation.

To showcase some of this work, and other research and projects in the Asia Pacific region, the Japan Biochar Association (JBA) and Japan Association for Human and Environmental Symbiosis (JAHES), in affiliation with the Australia and New Zealand Biochar Researchers Network (ANZ BRN) and the International Biochar Initiative (IBI), will host the 2nd Asia Pacific Biochar Conference, APBC KYOTO 2011, in Kyoto, Japan September 15 – 18, 2011.

The conference is open to all biochar researchers, users, producers, and supporters. The discussion topics will correspond to three major research themes:

1. Education and diffusion methods of carbon sequestration by biochar;
2. The impacts of applying biochar to agriculture and forest soils to include: effects on yields, microbial activity, soil physical and chemical properties and greenhouse gas emissions;
3. Steps in the commercialization of biochar: lessons from the region to include: standardization and characterization in the production of biochar; biochar production processes; financial and market development; meeting local regulations, and R&D.

The conference organizing committee welcomes all abstracts submitted through April 15th, 2011. More information on submitting an abstract can be found at the APBC KYOTO 2011 homepage: <http://apbc2011.com> (click on the “Call for Abstracts” link and follow the instructions).

We are confident that APBC KYOTO 2011 attendees will learn something valuable during the conference in Kyoto and play a part in the diffusion of biochar within the Asia Pacific region and the world.

Getting the Biochar Industry Up To Speed: What can we learn from the Pellet Business?

By Dr Jerry Whitfield

Biochar is seemingly well positioned for success. The world needs improved soils and better use of fertilizers to provide sufficient food in the future. It must also reduce atmospheric greenhouse gases to avoid the worst impacts of climate change. Biochar can positively impact these global challenges and, politics aside, these needs are immediate. Biochar’s environmental credentials are exemplary, and it has even been touted as a “geo-engineering” solution.

Given this background and an abundance of good press, why is so little biochar being produced, sold and used? It is worth considering this carefully as the industry plans for its future. Building the wood pellet industry in the US during the 1980s provides some historical perspective for this discussion, and as an early leader of that industry, I will attempt to provide some insight.

For the remainder of this piece, please see:

<http://www.biochar-international.org/gettingthebiocharindustryuptospeed>.

Biochar Briefs - News Roundup for March 2011

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

Testing biochar in farms and forestry will be part of the first approved CDM (Clean Development Mechanism) project in the Democratic Republic of Congo. Ibi village, located approximately 150 kilometers from the capital Kinshasa, will replant its degraded forest and receive carbon payments that will support schools and health clinics. Part of the reforestation will be used as a sustainable source of charcoal for urban areas, which will reduce the pressure of deforestation on native forests. Biochar produced from this effort will be utilized as a soil amendment.

The STEPS Centre, a UK-based interdisciplinary global research and policy group has released a report titled: "Biocharred pathways to sustainability? Triple wins, livelihoods and the politics of technological promise." This working paper is produced by an interdisciplinary, collaborative project on Anthropogenic Dark Earths in Africa.

The Biochar Solution: Carbon farming and climate change, a book by Albert Bates, is reviewed in the New Agriculturalist. The book is highly recommended: "Albert Bates is a natural storyteller, and what a story he tells in the biochar solution...Bates is an ambitious and highly able communicator, with a Bill Bryson-esque ability to make science gripping and entertaining...The Biochar Solution is an excellent and thought-provoking read." (To order the book, please see: <http://www.biocharsolution.com>).

Biochar reduced nitrous oxide generated by cattle urine in a pasture by 70% according to a new study. Researchers at Lincoln University in New Zealand conducted the experiment over an 86-day spring/summer period.

The American Society of Agricultural and Biological Engineers has revised its standard on biomass terminology and definitions with new definitions including one for biochar. The standard is ANSI/ASABE S593.1. You can order a copy by contacting the ASABE.

Biochar researcher John Miedema was profiled in the February issue of the Soil Food Web Newsletter. Miedema has built an experimental pyrolyzer at a timber company where he produces biochar under controlled conditions. He is collaborating with Oregon State University and USDA-ARS and has experimented with using biochar to filter heavy metals out of water.

Carbon Gold's Craig Sams has won several awards in the inaugural People and Environment Achievement Awards announced in London in March. He won the Green Entrepreneur of the Year award for his GroChar branded biochar products: a soil improver, a seed compost and an all purpose compost. Sams was also runner up in the "Best Earth Saving Idea" category.

Canadian commercial farm BlueLeaf released results of their third year of agricultural field trials using CQuest Biochar produced by Dynamotive Energy Systems. The results show continued greater biomass growth with a one-time biochar application rate of 3.9 t/ha in a northerly climate on normal agricultural soils.

Carbon Roots International, which works with farmers in a remote valley in the Haitian highlands, has introduced biochar and other sustainable farming methods to help subsistence farmers increase their food harvest, revitalize their soils, stop deforestation, and combat climate change.

A lab in Wales is going underground to study soils and biochar. Bangor University has been awarded a £150,000 grant from the Royal Society to refurbish and refit an existing rhizotron – a below-ground laboratory used in the study of soils and plant roots – at the Treborth Botanic Garden.

German researchers at the Free University of Berlin are using Terra Preta compost to rehabilitate degraded and polluted soils at a former military site. The project has commercial partners and has been funded by the Federal Research Ministry.

Thermal power, fuel, and biochar will be produced at a new bioenergy laboratory at Aston University in Birmingham, England. The £16.5 million project will use agricultural waste, sewage sludge and algae as feedstocks.

Biochar will be used to propagate native plants at a nursery in Victoria, Australia. Researchers hope that biochar will improve seedling germination, plant growth and production efficiency of native plants used extensively in land restoration projects.

The Leopold Center for Sustainable Agriculture at Iowa State University is funding 19 grants for new research projects that address the need to move toward agricultural sustainability and resilience on the Iowa landscape, including a project titled, "Biochar and managed perennial ecosystems: Testing for synergy in ecosystem function and biodiversity."

Draft Biochar Sustainability Protocols Released

Developed as a collaboration between Pacific Northwest Biochar (PNW Biochar) and the United States Biochar Initiative (USBI), the protocols "set forth a shared vision and direction for the future of biochar technology among biochar proponents to prevent unintended consequences that could potentially arise from this process." The intent of the protocols is to provide a process for biochar stakeholders (those actually farming, producing, distributing and using biochar) to determine what methodologies they would need to certify and adopt to ensure that they are in fact making and utilizing biochar in a socially, environmentally and economically sound manner. The protocols lay out principles, which set goals for all participants in the life-cycle of biochar. The principles are followed by baseline practices which are intended to set the threshold for where sustainability begins.

The draft of these protocols is available at:

http://www.biochar-international.org/sites/default/files/Biochar_Sustainability_Protocols_March_2011_Draft.pdf.

Report: Biomass Air Quality Regulations Webinar for US-based Emissions

The Biomass Thermal Energy Council (BTEC) hosted a webinar on March 17 that included several topics of interest to biochar project developers. The purpose of the webinar was to update operators of biomass-fired boilers on the US EPA's final Maximum Achievable Control Technology (MACT) rules released in February. Jim Eddinger, a senior technical advisor at EPA, gave an overview of the new regulations. While not as stringent as originally proposed, the rules will require boilers to meet new standards that will better protect public health and require operators to invest in additional pollution controls in most cases. John Hinckley of Resource Systems Group Inc. discussed a study comparing emissions and the cost of pollution controls from 24 biomass burning systems under US and European regulations. Answering a question about the combustion technologies least likely to require expensive pollution controls, Hinckley responded that "close coupled gasifiers produce very low PM emissions, often lower than the MACT limit."

It is important when considering woody biomass emissions to consider alternative fates of the material, as wood waste is often burned in the field with no pollution controls. Carrie Lee, a staff scientist with the Stockholm Environment Institute, presented results from the study, "Greenhouse gas and air pollutant emissions of alternatives for woody biomass residues." This study examined 15 alternative fates for forest residues including open burning for disposal,

industrial and residential energy generation, and conversion to products such as paper pulp, compost and biochar. The study used the principles of Life Cycle Analysis (LCA), which accounts for all emissions of the alternatives, including processing and transport, as well as fossil fuel that can be displaced by biomass energy. This kind of information will be important for the EPA's upcoming decision on how to apply greenhouse gas emissions permitting to biomass facilities.

The full recorded webinar and webinar slides are available at the BTEC website <http://biomassthermal.com/resource/webinars.asp#4>.

Research Needs and Priorities Document Posted on IBI Site

IBI staff, with input from IBI Advisory Committee members, has drafted an initial list of research needs and priorities for biochar (posted on the Research and Higher Education page at: <http://www.biochar-international.org/research/education>). This document lists eight topic areas where we see the highest need for research including material characterization, field application for climate change mitigation, field application for soil remediation, field application for soil fertility improvement, environmental sustainability of biochar technology, biochar production, economics of biochar systems, safety of biochar use, and social implications of biochar technology. We will post updated drafts on a regular basis and encourage additions (especially to the researchers list)—please send them to [Thayer Tomlinson](#).

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](#).

Submit Abstract for Conference: After the two previous successful events in April 2009 and 2010 that drew together a diverse audience of more than 100 biochar researchers and practitioners, the UK Biochar Research Centre (UKBRC) is happy to announce the 3rd UK Biochar Conference. The conference will take place in the beautiful historic city of Edinburgh on the 25th and 26th of May 2011 and will be preceded by an official unveiling of a new pilot-scale 'specified biochar' production pyrolysis facility at the UKBRC on the 24th of May. The conference organizers are accepting abstracts until April 3rd, 2011. For more information as well as conference registration please see:

<http://www.sccs.org.uk/biochar/Edinburgh-May-2011>



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>; submission period is March 1 to April 15, 2011.

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

Upcoming Calendar Events

April 14 – 15: Heating the Northeast; location: Manchester, NH; more information <http://www.heatne.com> (includes a biochar panel with speakers Hugh McLaughlin, Jock Gill and Jerry Whitfield)

April 30 – May 5: BASH: Biochar and Site Heat Stove 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>.

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 United States Biochar Initiative (USBI), the Pioneer Valley Biochar Initiative; Biochar Northeast; and the Sonoma Biochar Initiative, all from the United States.

United States Biochar Initiative (USBI): Conference Report

Huge Success in a Small Town: Biomass to Biochar Conference in St. Regis, Montana
A March 21st Biomass to Biochar Conference drew 90 people from four states to the small town St. Regis in Mineral County, Montana (pop. 1,100). The diverse and enthusiastic crowd included biochar and forest products experts, farmers, researchers and rural community outreach specialists from federal, state and local government, universities, industry and the conservation community. What convergence of factors created this kind of biochar buzz in a remote timber community?

Several years ago, the Mineral County Challenge was launched under the leadership of Mineral County Extension and Dunrovin Research with the intention to expand sustainable economic opportunity. Tricon Lumber, a leading local industry, was seeking innovations in generating on-site heat and energy and to maximizing their value-added products. Meanwhile U.S. Forest Service managers and researchers were exploring ways to improve forest health and wisely use the abundance of biomass generated by insect-killed trees and a backlog of thinning.

Community leaders were looking for ways to create jobs and improve the local economy. Farmers and foresters wanted to improve soils, and conservationists wanted all of the above but to ensure that any proposed actions were sustainable and environmental quality maintained. To read the remainder of this conference report, please see: <http://www.biochar-international.org/conference/Montana>.

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

The weekly seminar series "Climate, Energy, Biochar, & Agriculture" sponsored by the University of Massachusetts Center for Agriculture and the Department of Plant, Soil and Insect Sciences with the cooperation of the PVBI and the New England Small Farm Institute (NESFI) in Belchertown MA, is well under way. University faculty and visitors have presented talks which initially attempted to define problems of energy and the environment, focusing on the preparation of biofuels by various means. The six remaining sessions focus on biochar with an emphasis on its use in agriculture. A [website contains the full schedule as well as copies of presentations](#). Continuation in future years is anticipated.

NESFI expects the delivery of an Adam Retort for biochar production in the near future, and once this arrives, the group will conduct studies in both biochar production for agricultural purposes (and use the biochar for field trials) and look at how to provide a source of heat for farm operations as a by-product of pyrolysis. These efforts are coordinated with the UMass Center for Agriculture with use of University farms and its perma-culture facilities. The group has made presentations on biochar to local school groups and is planning a workshop for school teachers.

Biochar Northeast, United States

Members from Biochar Northeast recently participated in the Ecological Landscaping Association (ELA) conference in Springfield MA by hosting two biochar booths—with information on biochar in soils and production, a hands on learning center with samples of different biochars, and a number of small biochar units including TLUD stoves and a larger toucan unit. Following the ELA conference, the board held a meeting to review progress and plan activities for 2011. Biochar Northeast is in the process of designing and building a website which should be online soon. For more information, please see: <http://www.biochar-international.org/regional/northeast>.



Sonoma Biochar Initiative, California, United States

The SBI has been meeting monthly with county government agencies to promote biochar. Under the informal moniker of the Biochar Working Group, they meet with the Regional Climate Protection Authority (RCPA, lead agency), Sonoma County Water Agency (SCWA), and the Sonoma County Agriculture Preservation and Open Space District. Joining in discussion at various times are the Climate Protection Campaign, Sonoma Compost Company, Trip Allen-producer of "Biocharm", and one presentation from a UC Davis researcher. SBI is also looking into developing a west coast biochar conference with a focus on practical agricultural applications in 2012. For more information on the Sonoma Biochar Initiative, please see: <http://www.biochar-international.org/sonoma>.

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.

Azargohar, R. and Dalai, A. K. (2011). The direct oxidation of hydrogen sulphide over activated carbons prepared from lignite coal and biochar. *The Canadian Journal of Chemical Engineering*, doi: 10.1002/cjce.20430.

Dumroese, Kasten R., Heiskanen Juha, Englund Karl, and Tervahauta Arja (2011). Pelleted biochar: Chemical and physical properties show potential use as a substrate in container nurseries. *Biomass and Bioenergy*, 2/2011.

Garner, Jed (2011). Can Biochar Help you Realize more Value from Manure?. *Progressive Dairyman*; February 2011; <http://www.biochar-international.org/node/2348>.

Haefele S.M., Konboon Y., Wongboon W., Amarante S., Maarifat A. A., Pfeiffer E. M., and Knoblauch C (2011). Effects and fate of biochar from rice residues in rice-based systems. *Field Crops Research*, 2/2011.

Husk, Barry, and Major Julie (2011). Biochar Commercial Agriculture Field Trial in Québec, Canada – Year Three: Effects of Biochar on Forage Plant Biomass Quantity, Quality and Milk Production 3/2011.

Scheer, Clemens, Grace Peter R., Rowlings David W., Kimber Stephen, and Van Zwieten Lukas (2011). Effect of biochar amendment on the soil-atmosphere exchange of greenhouse gases from an intensive subtropical pasture in northern New South Wales, Australia. *Plant and Soil*, 3/2011.

Uchimiya, Minori, Wartelle Lynda H., Klasson Thomas K., Fortier Chanel A., and Lima Isabel M. (2011). Influence of Pyrolysis Temperature on Biochar Property and Function as a Heavy Metal Sorbent in Soil. *Journal Agric. Food Chem*, 2/2011.

Vaccari, F. P., Baronti S., Lugato E., Genesio L., Castaldi S., Fornasier F., and Miglietta F. (2011). Biochar as a strategy to sequester carbon and increase yield in durum wheat. *European Journal of Agronomy*, 2/2011.

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*, 3/2011.

Zimmerman, Andrew R., Gao Bin, and Ahn Mi-Youn (2011). Positive and negative carbon mineralization priming effects among a variety of biochar-amended soils. *Soil Biology and Biochemistry*, 2/2011.