



June 2013 News from the International Biochar Initiative

IBI Biochar Certification Program Launched

On May 29, 2013, IBI officially launched the *IBI Biochar Certification Program*, developed to further grow the biochar industry. With this program biochar manufacturers are able to certify that their product meets quality standards and is safe for application to soils. Once certified, biochars can carry the “IBI Certified Biochar” seal on their product label. The *IBI Biochar Standards* serve as the foundation for the *IBI Biochar Certification Program* and certification approval requires that biochar(s) pass testing requirements specified by the *IBI Biochar Standards*.

The *IBI Biochar Certification Program* is fully automated and accessible via IBI's website at <http://www.biochar-international.org/certification>, allowing biochar manufacturers/program participants to register, apply, and submit all required documentation on-line. IBI has received some registrations since the program launched and is looking forward to announcing the first certified biochars to carry the “IBI Certified Biochar” seal in the near future.

For questions or further inquiries regarding the *IBI Biochar Certification Program*, please contact us at certification@biochar-international.org.

Biochar Carbon Offset Protocol Development Update

IBI continues to make progress towards advancing the Quantification Methodology for Biochar Projects (aka the Biochar Carbon Offset Protocol) through the American Carbon Registry's (ACR) review process. Based on feedback from ACR, the protocol project team—comprised of IBI, the Climate Trust and The Prasino Group—is working on an initial set of revisions to the methodology. Pending completion and acceptance by ACR of this first set of revisions, the methodology will be distributed for a 4-week public comment period. During that time ACR will also offer a stakeholder consultation webinar to solicit additional public input. The project team will respond to public comments in a further revision of the document, and this version will then undergo at least two rounds of comment-and-response by a scientific peer review panel convened by ACR. Upon completion of the peer review and approval by ACR, the final methodology will be published on ACR's website and available for use by project proponents. In the coming weeks, IBI will announce the public comment period and ACR webinar, and will circulate the draft methodology through our website, press releases, and selected mailings.

Are You Interested in Joining the IBI Advisory Committee?

The IBI Advisory Committee is a voluntary group of IBI members that helps us ensure that we put out the most relevant, timely, and accurate information on biochar. This group is a review board for IBI materials and from time to time, we ask Advisory Committee members to answer specific questions from IBI staff or from reporters writing biochar stories. We reach out to the Advisory Committee members once every two months on average with a review request, all of which are strictly voluntary. Advisory Committee members also serve as advocates for IBI. Advisory Committee members serve a term of 18 months; the next term will be from mid-July 2013 to December 2014.

If you are interested in joining the IBI Advisory Committee, please submit your name, email address, institution, institution size, gender, country, language(s) spoken, committee focus area (see next sentence) and brief bio to [Thayer Tomlinson](#), IBI Communications Director, by **July 8, 2013**. Committee focus areas allow us to tailor our review requests to Committee member specialty areas and include (you may choose as many as you like): Biochar Policy; Biochar Production/Technology/Classification; Biochar Utilization/Use in Soils; Biochar Commercialization; and Socio/Economic Evaluation.

Please note you must be a current dues-paying IBI member or a developing country professional member to serve on the Advisory Committee. For more information on joining IBI, please see: www.biochar-international.org/join.

IBI Survey on Global Biochar Projects Successfully Completed

IBI received nearly 100 responses to our recent global biochar projects survey. The survey was designed to follow-up on a 2010 survey completed by IBI in conjunction with a World Bank project focused on developing country biochar projects. Initial results from this survey demonstrate that biochar projects have advanced considerably in their stage of development as compared to 2010, and that biochar deployment is truly global—project locations spanned 33 countries and covered all continents except Antarctica.

IBI will use information gathered in the survey to document trends, opportunities and barriers in the deployment of biochar systems across the globe. In particular, we will correlate the rich set of economic data collected including financing, budgets, revenues, and livelihood creation with other project considerations such as project scale, feedstocks, technologies, and byproducts to make inferences about project types that are successfully moving towards self-sustaining activities. We plan to widely disseminate these results later this year in a “state of the biochar industry”-type report that will combine biochar project and commercial activities.

IBI warmly thanks all respondents to the survey. If you would like to submit a survey but did not have the chance to do so, please email us at info@biochar-international.org.

IBI Publishes a White Paper on the Use of Biosolids for Biochar Production

As urban population centers grow, so do the waste byproducts of human habitation. Chief among these are biosolids (stabilized sewage sludge), the end result of wastewater treatment processes. While there are existing uses for biosolids, primarily direct land application as a fertilizer, tighter environmental regulations are making its disposal increasingly difficult. As wastewater operators search for ways to dispose of their biosolids, they may look to thermochemical conversion processes for biochar production as a viable alternative.

In the IBI White Paper *Pyrolysis and Gasification of Biosolids to Produce Biochar*, IBI explores experiences and opportunities around the use of biosolids for biochar production. While most work to date has focused on biosolids as a feedstock for energy production, there is a growing recognition that the solid biochar byproduct can be used as a soil amendment. In Japan, for example, there is a long history of charcoal production and scientists are conducting experiments around biosolids biochar for agriculture. Because of the potential presence of heavy metals and other pollutants in the biosolids feedstock, care must be taken to avoid the accumulation of toxicants in soils. However, strategies to address this risk exist and this area is clearly fertile grounds for increased public and private investment and research. For more information please view the *White Paper* at: http://www.biochar-international.org/sites/default/files/IBI_white_paper_biosolids_biochar_final.pdf.

Biochar Briefs: News Roundup for June

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

European Union

In the EU-funded project BioEcoSIM, 15 partners from 5 countries, led by the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, aim to convert livestock manure (mainly pig manure) into biochar and mineral fertilizers. The benefits include a more sustainable method to utilize pig manure, and the benefit of adding biochar to soils rather than straight manure (which can over-fertilize the soils and lead to nutrient run off). (link to: <http://phys.org/wire-news/132651572/livestock-manure-a-valuable-resource.html>)

The Philippines

At the first National Conference on Philippine Biochar in April, agricultural experts and government and private sector representatives proposed a way to improve soil fertility through the use of biochar. Various government agencies pledged support for the production and use of biochar to aid rural farmers to transition to more organic farming methods. The article includes a full graphic on how to produce biochar with local materials. (link to: <http://opinion.inquirer.net/54617/biochar-making>)

United States

Cool Planet Energy Systems announced it closed on \$29.9 million of its anticipated \$100 million D series financing that will fund construction of its first commercial production facility for biofuels. Cool Planet is currently operating a pilot facility in Camarillo, CA. One of the co-products of the biofuels production is biochar. (link to: <http://biomassmagazine.com/articles/9076/cool-planet-announces-29-9-million-in-funding>)

The U.S. Environmental Protection Agency (EPA) announced that seven university and college teams received the People, Prosperity and Planet (P3) Award for their innovative solutions to public health and environmental challenges. A team from Cornell University was one of the winners for their work on evaluating and improving biochar cookstove fuel resources in Kenyan communities. (link to: <http://www.waterworld.com/articles/2013/06/students-recognized-for-sustainable-environmental-solutions.html>)

Oregon Tech awarded two students with \$5,000 each at the annual Intel International Science and Education Fair. Jesuit High School student Meghana Rao was one of the winners for her project on the Novel Implementation of Biochar Cathodes in Microbial Fuel Cells (Phase I). Ms. Rao created a model of fuel cells that used biochar to generate energy. (link to: http://www.oit.edu/news/06-10-2013/oregon_tech_awards_two_scholarships_at_intel_isef_2013.aspx)

Chicago-based landscape architect Bernie Jacobs of Jacobs/Ryan Associates has been using biochar for the city's trees. Mr. Jacobs had seen biochar used for agriculture, but wanted to look at its effects on landscaping. He noted that honey locust trees in biochar-amended soils grew 24 inches in the first year, or about twice what Jacobs expected. Two years later, "They have continued to grow like frickin' weeds," he said. (link to: <http://www.wbez.org/blogs/chris-bentley/2013-06/chicago-landscapers-turn-ancient-amazonian-fertilizer-107645>)

Register Now for the 2013 USBI North American Biochar Symposium

There couldn't be a more exciting time to join 400 colleagues for a North American conference on biochar. Over the past six years, growers, scientists, engineers and entrepreneurs worldwide have experienced the remarkable properties and benefits of using biochar as a soil conditioner, as a medium for ecosystem restoration, as an agent for wastewater remediation, and even as a food additive to enhance livestock nutrition. Registration is now open for this event at:

www.symposium2013.pvbiochar.org/register.



In addition to learning about exciting new developments in the field through networking and formal presentations at the event, participants will also have the opportunity to attend the following:

- Ignite Talks – Monday night presentations by experts in the biochar field
- Exhibit tables
- Poster Presentations & Book Signings
- A Biochar Banquet with food stations that will feature local produce grown in biochar conditioned soil, as well as a variety of meats and adult beverages enhanced by biochar
- A Video Lounge
- A post-conference field day to learn more about technologies with a hands-on approach.
- To volunteer, ask questions, or share comments, please contact the conference organizer, Karen Ribeiro at: karen@pvbiochar.org

Opportunities in Biochar

- Submit an Abstract to the International Conference BCD2013 "Biochars, Composts and Digestates. Production, Characterization, Regulation, Marketing, Uses and Environmental Impact"/2013 International Biochar Conference: **due June 30**. For more information: www.bcd2013.eu.
- Submit an Abstract to the 2013 Geological Society of America's Annual Meeting: **due August 6**. For more information: <http://www.biochar-international.org/node/4129>.
- Submit an Expression of Interest for the Second International Biochar Training Course at Nanjing Agricultural University (NJAU), planned for October, 2013. For more information: <http://www.biochar-international.org/node/3845>.

New job postings at: <http://www.biochar-international.org/network/jobs>.

Upcoming Calendar Events

- July 4 – 5: New Zealand Biochar 2013. Location: Palmerston North, New Zealand. For more information: <http://www.biochar-international.org/node/3746>.
- September 1 – 13: GEPP Executive Summer School on Global Environmental Policy. Location: Geneva, Switzerland. For more information: <http://www.biochar-international.org/node/3780>.

- September 23 – 25: 3rd Annual World Congress of Agriculture 2013. Location: Hangzhou, China. For more information: <http://www.biochar-international.org/node/3995>.
- October 13 – 17: 2013 USBI North American Biochar Symposium: Harvesting Atmospheric Carbon: the Science and Synergies of Biochar. Location: Massachusetts, US. For more information: <http://www.biochar-international.org/node/3694>.
- October 14 – 18: 10th Meeting of the Grupo Brasileiro da Sociedade Internacional de Substâncias Húmicas (IHSS), Brazil. For more information: <http://www.biochar-international.org/node/4048>.
- October 17 – 20: International Conference on Biochars, Composts, and Digestates/2013 International Biochar Conference. Location: Bari, Italy. For more information: <http://www.biochar-international.org/node/4096>.
- October 25 – 31: The Second International Biochar Training Course held at Nanjing Agricultural University (NJAU). Location: Nanjing, China. For more information: <http://www.biochar-international.org/node/3844>.
- October 27 – 30: 2013 Geological Society of America's Annual Meeting with a session on "Pyrogenic black carbon, or biochar, in soils and sediments, its characterization and fate, its effects on the carbon cycle and carbon sequestration, and its effects on soil properties". Location: Colorado, US. For more information: <http://www.biochar-international.org/node/4128>.
- October 29 – 30: "bioenergy+recycling" Conference with Exhibition American-European Technology and Business Exchange. Location: Pennsylvania, US. For more information: <http://www.biochar-international.org/node/4101>.

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 the 52 regional and national biochar groups, please see IBI's website (link to: <http://www.biochar-international.org/network/communities>). This month includes updates from the Southeast Asia Biochar Interest Group, the UK Biochar Research Centre, the Illinois Biochar Group, and the Pioneer Valley Biochar Initiative (PVBI), United States.

South East Asia Biochar Interest Group

Hawaii Biochar Products has signed an MOU with the Center for Environment Research Education and Development (CERED) based in Hanoi, Vietnam to create a Vietnam Biochar industry test bed and training program. CERED is headed by Nobel Laureate Dr. Nguyen Huu Ninh, Ph.D. The program will further CERED's mission to provide solutions for sustainable agriculture using organic materials and environmentally friendly processes. Together, they will support project proposals that create and strengthen a Vietnam biochar industry and related energy, policy, and training infrastructure. For more information on this project, please see: <http://www.prlog.org/12131112-hawaii-biochar-products-signs-historical-memorandum-of-understanding.html>.

UK Biochar Research Centre (UKBRC)

UKBRC is working with Whitmuir Organic Farm, outside Edinburgh, on a small-scale trial of biochar as a feed supplement, and assessing the weight gain of pigs against control groups. For more information on this project, please see: <http://thewhitmuirproject.wordpress.com/tag/biochar>.

The Illinois Biochar Group, United States

The Illinois Biochar Group (IBG), in conjunction with the Illinois Sustainable Technology Center (a division of the Prairie Research Institute at the University of Illinois), and the USDA, organized the first Midwest Biochar Conference on June 14, 2013. The event was held on the campus of the

University of Illinois in Champaign. There were 75 attendees from throughout the US. Abstracts for the oral presentations and posters are available on the IBG website http://www.biochar.illinois.edu/past_events.shtml. The powerpoints and videos of the oral presentations will be posted for viewing on the website by July 1, 2013.

Researchers Nancy Holm and Dr. BK Sharma from the Illinois Sustainable Technology Center, along with Dr. Kurt Spokas USDA-ARS in St. Paul, MN, are collaborating on a greenhouse study using ten different soils in Illinois combined with different biochar treatments. The study will investigate the chemical, biological, and physical properties across a range of soils found in Illinois when mixed with biochar at three different concentrations and made from three different feedstocks using two production methods. The data collected in this study will enable researchers to better predict the behavior of the biochar in Illinois soils, understand the effects of application of various biochars on the soil quality, and help farmers decide what biochar will be best for their soil types. The data will also serve as a guide for understanding potential effects of the biochar additions on plant growth, microbial activity, and greenhouse gas emissions in these different soils. The research project will be completed by Dec. 2013.

The Pioneer Valley Biochar Initiative (PVBI), United States

In addition to organizing the 2013 USBI North American Biochar Symposium, PVBI members have been working to highlight the role of biochar in the local community (Massachusetts). Members have attended regional meetings to talk about biochar, Dr. Richard Stein had a letter published on the benefits of biochar in the Amherst Gazette, and members of the group are looking into producing a TV documentary on biochar that could be shown nationally.

Recently Published Biochar Research

IBI tracks all published research on biochar and includes it in our [online bibliography](#). 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](#).

Ahmed, Hasan Pervej; Jeff Schoenau (2013). Canola Yield and Nutrient Uptake as Affected by Biochar Addition to a Brown Chernozem. http://www.usask.ca/soilscrops/conference-proceedings/pdf/Day_1_Room_1_Presentations/008%20Hasan_Pervej_Ahmed.pdf.

Ahmad, Mahtab; Deok Hyun Moon; Meththika Vithanage; Agamemnon Koutsospyros; Sang Soo Lee; Jae E Yang; Sung Eun Lee; Choong Jeon; Yong Sik Ok (2013). Production and use of biochar from buffalo-weed (*Ambrosia trifida* L.) for trichloroethylene removal from water. *Journal of Chemical Technology and Biotechnology*.

Angin, Dilek; T. Ennil Köse; Ugur Selengil (2013). Production and characterization of activated carbon prepared from safflower seed cake biochar and its ability to absorb reactive dyestuff. *Applied Surface Science*.

Berge, Nicole D.; Claudia Kammann; Kyoung Ro; Judy Libra (2013). 8. Environmental Applications of Hydrothermal Carbonization Technology: Biochar Production, Carbon Sequestration, and Waste Conversion. *Sustainable Carbon Materials from Hydrothermal Processes*.

Betts, Aaron (2013). Evaluating a Meat and Bone Meal Biochar Amendment for Immobilization of Zinc in a Smelter Impacted Soil. Master of Science (M.Sc.).

Chen, Junhui; Xiaoyu Liu; Jinwei Zheng; Bin Zhang; Haifei Lu; Zhongzhi Chi; Genxing Pan; Lianqing Li; Jufeng Zheng; Xuhui Zhang; Jiafang Wang; Xinyan Yu (2013). Biochar soil amendment increased bacterial but decreased fungal gene abundance with shifts in community

structure in a slightly acid rice paddy from Southwest China. *Applied Soil Ecology*. Volume 71. Pages 33–44.

Chintala, Rajesh; Thomas E Schumacher; Louis M McDonald; David E Clay; Douglas D Malo; Sharon K Papiernik; Sharon A Clay; James L Julson (2013). Phosphorus Sorption and Availability from Biochars and Soil/Biochar Mixtures. *CLEAN – Soil, Air, Water*.

Deng, Hongyuan (2013). Effect of Biochar Amendment on Soil Nitrous Oxide Emission. A thesis submitted to McGill University in partial fulfillment of the requirement of the degree Master of Science. Department of Bioresource Engineering, McGill University, Montreal; <http://webpages.mcgill.ca/staff/deptshare/FAES/066-Bioresource/Theses/theses/442HongyuanDeng2012/HongyuanDeng.pdf>.

Dong, Da; Min Yang; Cheng Wang; Hailong Wang; Yi Li; Jiafa Luo; Weixiang Wu (2013). Responses of methane emissions and rice yield to applications of biochar and straw in a paddy field. *Journal of Soils and Sediments*.

Joseph, S; ER Graber; C Chia; P Munroe, S Donne; T Thomas; S Nielsen; C Marjo; H Rutledge; GX Pan; L Li; P Taylor; A Rawal; J Hook (2013). Shifting paradigms: development of high-efficiency biochar fertilizers based on nano-structures and soluble components. *Carbon Management*. Vol. 4, No. 3, Pages 323-343.

Kannan, P.; P. Arunachalam; G. Prabukumar; M. Govindaraj (2013). Biochar an alternate option for crop residues and solid waste disposal and climate change mitigation. *African Journal of Agricultural Research*. <http://www.academicjournals.org/AJAR/PDF/pdf2013/6Jun/Kannan%20et%20al.pdf>.

Kung, Chih-Chun; Bruce A. McCarl; Xiaoyong Cao (2013). Economics of pyrolysis-based energy production and biochar utilization: A case study in Taiwan. *Energy Policy*.

Ladygina, Natalia; Francois Rineau (2013). Biochar and Soil Biota; http://books.google.com/books?hl=en&lr=lang_en&id=uualouVlj7gC&oi=fnd&pg=PP1&dq=biochar&ots=G4LZMeyQMp&sig=nEOYiZb2mbZUQYTJ9G3-wltDAhw.

Li, Xiaoming; Qirong Shen; Dongqing Zhang; Xinlan Mei; Wei Ran; Yangchun Xu; Guanghui Yu (2013). Functional Groups Determine Biochar Properties (pH and EC) as Studied by Two-Dimensional ¹³C NMR Correlation Spectroscopy. *PLoS ONE* 8(6).

Liebeck M, Vogel GH (2013). A Sustainable Concept for the Supply of Pure CO₂ as a Carbon Source for Solar Fuels - Synergies of Biochar and Biogas. *Chemie Ingenieur Technik*, Vol.85, No.5, 618-624.

Marleena, Hagner; Penttinen Olli-Pekka; Kari Tiilikkala; Setälä Heikki (2013). The effects of biochar, wood vinegar and plants on glyphosate leaching and degradation. *European Journal of Soil Biology*.

Meng, Jun; Lili Wang; Xingmei Liu; Jianjun Wu; Philip C. Brookes; Jianming Xu (2013). Physicochemical properties of biochar produced from aerobically composted swine manure and its potential use as an environmental amendment. *Bioresource Technology*.

Montanarella, Luca and Emanuele Lugato (2013). The Application of Biochar in the EU: Challenges and Opportunities. *Agronomy* 3, 462-473; www.mdpi.com/journal/agronomy.

Oleszczuk, Patryk; Izabela Josko; Marcin Kusmierz (2013). Biochar properties regarding to contaminants content and ecotoxicological assessment. *Journal of Hazardous Materials*.

Phongpanith, Sengsouly; Sangkhom Inthapanya; and T R Preston (2013). Effect on feed intake, digestibility and N balance in goats of supplementing a basal diet of *Muntingia* foliage with

biochar and water spinach (*Ipomoea aquatica*). *Livestock Research for Rural Development* 25 (2); <http://www.lrrd.org/lrrd25/2/seng25035.htm>.

Qiu, Yuping; Minwei Wu; Jing Jiang; Liang Li; G. Daniel Sheng (2013). Enhanced irreversible sorption of carbaryl to soils amended with crop-residue-derived biochar. *Chemosphere*.

Srinivasarao; Ch. K.A. Gopinath; G. Venkatesh; A.K. Dubey; Harsha Wakudkar; T.J. Purakayastha; H. Pathak; Pramod Jha; B.L. Lakaria; D.J. Rajkhowa; Sandip Mandal; S. Jeyaraman; B. Venkateswarlu; and A.K. Sikka (2013). Use of Biochar for Soil Health Enhancement and Greenhouse Gas Mitigation in India: Potential and Constraints. *NICRA Bulletin of the National Initiative on Climate Resilient Agriculture Central Research Institute for Dryland Agriculture, Hyderabad, India*; <http://www.nicra-icar.in/nicrarevised/images/publications/Biochor%20Bulletin.pdf>.

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Suguihiro Talita Mayumi; Paulo Roberto de Oliveira; Edivaltrys Inayve Pissinati de Rezende; Antonio Sálvio Mangrich; Luiz Humberto Marcolino Junior; Márcio F. Bergamini (2013). An Electroanalytical approach for evaluation of biochar adsorption characteristics and its application for Lead and Cadmium determination. *Bioresource Technology*.

Taketani, Rodrigo Gouvêa; Amanda Barbosa Lima; Ederson da Conceição Jesus; Wenceslau Geraldes Teixeira; James M. Tiedje; Siu Mui Tsai (2013). Bacterial community composition of anthropogenic biochar and Amazonian anthrosols assessed by 16S rRNA gene 454 pyrosequencing. *Antonie van Leeuwenhoek*.

Teixidó, Marc; Carles Hurtado; Joseph J. Pignatello; José L. Beltrán; Mercè Granados; and Jordan Peccia (2013). Predicting Contaminant Adsorption in Black Carbon (Biochar)-Amended Soil for the Veterinary Antimicrobial Sulfamethazine. *Environmental Science and Technology*.

Wang, Cheng; Haohao Lu; Da Dong; Hui Deng; PJ Strong; Hailong Wang; and Weixiang Wu (2013). Insight into the Effects of Biochar on Manure Composting: Evidence Supporting the Relationship between N₂O Emission and Denitrifying Community. *Environ. Sci. Technol.*

Zheng, Hao; Zhenyu Wang; Xia Deng; Stephen Herbert; Baoshan Xing (2013). Impacts of adding biochar on nitrogen retention and bioavailability in agricultural soil. *Geoderma*. Volume 206, Pages 32–39.