



## News from the International Biochar Initiative

IBI is a non-profit organization supporting researchers, commercial entities, policy makers, farmers & gardeners, development agents and others committed to sustainable biochar production and use.

Help put the Earth **Back in the Black**

### October 2012 Newsletter

#### Announcements from IBI's Board of Directors

**Board Departures.** IBI's Board of Directors and Executive Director met in Ithaca, New York in late September for an IBI Board retreat. During the retreat, the Board celebrated the departure of two members who stepped down from the Board after each serving two 3-year terms. Thanking them for their important roles and contributions as founding members of IBI and for their tireless dedication to the organization, the Board accepted the resignations of Board Vice-Chair Stephen Joseph of Australia and Board Treasurer Ellen Baum of the US, whose terms ended effective Sunday, September 23, 2012 at the close of the Board meeting.

**Board Appointments.** The Board nominated and approved Board member Marta Camps of New Zealand as the new IBI Board Vice-Chair, and David Wayne of the UK as the new IBI Board Treasurer. Additionally, Board members Johannes Lehmann and David Wayne were appointed to serve additional 3-year Board terms.

The Board would also like to expressly thank the professional organizational development consultants and retreat facilitators, Phil McArthur of Action Design and Joel Yanowitz of The Cascade Group, Inc. McArthur and Yanowitz led a productive and invigorating two days, enabling the Board to assess past accomplishments and ongoing and future challenges while seeking to enhance the effectiveness of IBI and its Board in identifying and meeting the needs of the biochar community and the growing biochar field. This was IBI's second Board retreat organized and supported by McArthur and Yanowitz (the first was in 2009), and we commend them for the skillful and talented support that made the retreat a resounding success.

Pending refinement of a summary of the Board retreat outcomes, we will report on additional activities and decisions in future IBI newsletters. IBI staff would like to add their thanks and appreciation to departing IBI Board members Stephen Joseph and Ellen Baum, and congratulations to the new Board Vice-Chair Marta Camps and Treasurer David Wayne, with whom we look forward to continued successful endeavors on behalf of IBI and the biochar community.

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#### Staff Announcement from IBI

IBI would like to thank departing staff consultant Kelpie Wilson, whose last day with IBI is November 3, 2012, for her contributions to our work and her dedication to the biochar community.

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## IBI Biochar Sustainability Survey Ranks Highest Priority Needs for Sustainable Biochar Systems

The global biochar community ranks the greatest potential benefits from biochar requiring high priority attention at this time as beneficial soil effects, increased water retention in droughty soils, increased soil stability, biochar effects on plant disease and pest resistance, and biochar's effectiveness in increasing fertilizer efficiency. Additionally, the community ranks the greatest potential risks from biochar to include negative impacts on soil ecosystem species, the cost of biochar technology, and the lack of sustainability monitoring, reporting and verification methodologies. These results are reported in a recent survey conducted by the IBI as part of its efforts to develop global sustainability guidelines for biochar production and utilization.

IBI is releasing some of the results from the recent survey, which asked members of the IBI network to rank the issues that affect the sustainability of biochar systems, prioritize specific biochar systems for sustainability analysis, and identify resources for assessing and monitoring the sustainability of biochar systems.

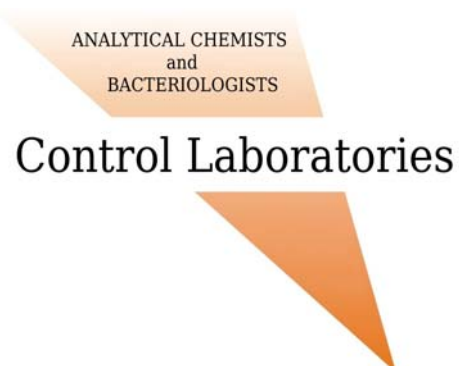
The survey is part of an open, transparent, public process currently underway by IBI to create international guidelines for the sustainable production and use of biochar. The process began in June 2012 and is projected for completion in May 2013. The resulting IBI Biochar Sustainability Guidelines are intended as a practical tool for biochar users, producers, markets and regulators to assist in monitoring and evaluating the sustainability of existing or proposed biochar systems. IBI is committed to creating a benchmarking tool for biochar system sustainability evaluation that is adaptable to many different regions, feedstocks, technologies, environments and communities, and that will promote continued improvements to biochar systems.

The survey was undertaken in September 2012 and 89 respondents from 29 countries participated. Slightly more than half the respondents were IBI members, and an additional 40% were non-paying subscribers to the IBI newsletter and electronic network. One third of the respondents were academic researchers. The respondents also included consultants, farmers, biochar producers, NGOs and engineers, among others. To see more results, please go to: <http://www.biochar-international.org/sustainability>; IBI members can login at <https://ibi.memberclicks.net/login> to see full results and graphs.

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## New IBI Business Member: Control Laboratories

Control Laboratories has been in business since 1955 and in 2006 extended their organics testing to include biochar research and testing. The speculation around the promising benefits of biochar sparked their interest to aide in putting actual numbers and data behind the claims. Control Labs has become one of the top biochar testing facilities in the nation with innovative research and unique tests, as well as expertise in



the IBI standards. They have developed test packages for all sectors ranging from the producer to consumer to researcher to aide in better understanding the impacts of biochar for its varying applications. They currently offer biochar tests for biomass feedstock assessment, general characteristics, carbon sequestration, plant germination, metal retention, agricultural nutrient retention, pellet fuel, swale formation, potting mix, plant available agricultural related constituents, soil sediment removal, water retention, soil compression, soil shrinkage and many more.

For more information, contact [Frank](#) or [Megan](#) or see [www.biocharlab.com](http://www.biocharlab.com); (831) 724-5422.

A listing of all current [IBI Business Members can be found on our website](#). For more information on a membership or to join, please see: <http://www.biochar-international.org/join>.

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## Profile: Rainbow's End Farm--Applying Carbon Expertise to Small Farms

The world of industrial activated carbon may seem completely unrelated to a small farm in the bucolic setting of rural New York state, but Cornelius and Patricia du Plessis have made this connection in a way that they hope will bring benefits to society, abundance to their Rainbow's End Farm, and profits for their small company. Their philosophy can be summed up by the quote on their website from American ecologist Aldo Leopold: "There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery and the other that heat comes from the furnace".



Cornelius du Plessis came to biochar with 30 years experience in industrial engineering and activated carbon. He holds eight US patents in the process and technology of converting agricultural biomass residues into activated carbon and charcoal, and has worked internationally in Africa, South America and Mexico. Today he is applying his knowledge of carbon properties and thermo-chemical conversion processes to the development of clean biochar technologies for use on the farm. To read the remainder of this story, please see:

[http://www.biochar-international.org/Rainbows\\_End\\_Farm](http://www.biochar-international.org/Rainbows_End_Farm)

*Photo courtesy of Rainbow's End Farm*

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## 4th International Biochar Congress in Beijing China a Success

The 4th International Biochar Congress, entitled "Biochar — Road to Richer Food and Safer Environment", was successfully held at the Friendship Hotel in Beijing, China, September 16 – 20 2012. The Congress was hosted by China Agricultural University (CAU) and organized by the CAU Biochar Group, the first Chinese regional biochar group.

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More than 200 people attended the Congress coming from more than 20 countries including Canada, Australia, New Zealand, Korea, Japan, India, Malaysia, Philippines, the United States, the United Kingdom, Germany, Italy, Denmark, Norway, Ireland, Finland, Spain, Sweden, Brazil, Vietnam, Cambodia, Lao PDR, and Nigeria, and over 35 organizations within China.



There were 68 oral presentations and 50 poster presentations on the following biochar-related themes: Production and Characterization, Plant Growth and Responses, Soils, Climate Change, and Overall Effects on the Environment. Many of the presentations highlighted new results and activities, reflecting the frontier of biochar research. These reports posed a challenge to the scientific community to identify the short- and long-term risks of biochar incorporation to soil, if any, and how those risks may be overcome before biochar can be widely used commercially. The Congress website is: [www.ibi2012.org](http://www.ibi2012.org); for a full conference report with photos, please see: [http://www.biochar-international.org/sites/default/files/4\\_International\\_Biochar\\_Congress\\_Report.pdf](http://www.biochar-international.org/sites/default/files/4_International_Biochar_Congress_Report.pdf).

*Photo courtesy of the conference organizers*

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### Report from the First International Biochar Training Course held at Nanjing Agricultural University (NJAU)

In advance of the 4th International Biochar Congress, a Biochar Training Course was held September 10 – 15 at the Nanjing Agricultural University (NJAU) in Nanjing, Jiangsu, China. This course was a joint effort by NJAU, the University of NSW (Australia) and the University of Newcastle (United Kingdom). Thirty participants attended from China, Vietnam, Indonesia, Malaysia, Nepal, Pakistan, Brazil, Australia, Kenya, Nigeria, US, Spain and France. IBI board members Dr. Marta Camps, Dr. Johannes Lehmann, Dr. Saran Sohi, and Dr. Stephen Joseph made contributions to training materials and lectures (both in person and over video). Additional lectures were given by Prof Ken Latham from Newcastle University and Professors Genxing Pan and Lianqing Li from NJAU.



The training's focus was to provide an overview of what is known and what is not known about

many different aspects of biochar. These included the properties of biochar materials as a function of feedstock, process conditions and technology; and crop responses of different biochars, incorporated at different application rates and different pre- and post-treatments in different eco-systems. Participants also gained an understanding of the principles and practice of pyrolysis and biochar production and how to develop and implement sustainable biochar projects and/or businesses. The course also developed training materials and practical exercises to have them evaluated by the participants in an interactive environment.

*Photo courtesy of Stephen Joseph*

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## Biochar Briefs: News Roundup for October

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

### **Australia**

[Results from a five year biochar trial in Tasmania's Huon Valley show](#) that apples grown on trees from biochar-amended soils are up to 20 centimeters bigger than untreated trees growing in the same orchard just rows apart. The biochar trial is being run in conjunction with the Australian and New Zealand Biochar Network and the Tasmanian Institute of Agriculture.

[The public was invited to see a demonstration of a mobile pyrolysis machine](#) processing green waste into biochar in the town of Bathurst. The machine was created by Earth Systems and the Victorian North East Catchment Management Authority.

[Greening Australia's Biochar and Energy from Trees \(BETR\)](#) project is addressing biodiversity decline as well as climate change. The growth of farming has led to a decline in biodiversity as a result of the widespread land-use changes. Growing native-species tree plantations, which are turned into energy and biochar, can help improve local biodiversity, connect fragmented landscapes and reduce soil loss.

### **Austria**

[Austrian company and IBI Business Member Sonnenerde is making biochar](#) from paper fiber and grain husks. They have applied for the 2012 Austrian Climate Protection Award for their work to turn waste into biochar.

### **Canada**

[Green Teacher magazine features a story on biochar](#) in education titled: Hands-on Learning With Biochar.

### **Fiji**

[AusAid, the Australian aid agency, is supporting a project in Fiji](#) to restore soils damaged by a recent hurricane. The funding will provide researchers with equipment to produce and trial organic matter inputs including coco-peat and biochar.

### **Malaysia**

[Participants at the Malaysian Palm Oil Board's \(MPOB\) International Oil Palm Biomass](#)

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Conference on Sept 20 and 21 were informed that oil palm biomass can produce many high value products, including biochar.

### **United States**

[Tree Care Industry magazine has a feature story on "Biochar for Arborists"](#) that profiles work by Bartlett Tree Services, the Morton Arboretum and others to develop methods for using biochar in the care of trees.

[Bin Gao, an associate professor at the University of Florida Institute](#) of Food and Agricultural Sciences has received a \$3,000 award to support research to improve agricultural and environmental sustainability involving biochar.

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## Opportunities in Biochar

- Submit an Abstract: The 2nd Nordic Biochar Seminar (February 14 – 15, 2013 in Helsinki, Finland); due October 30, 2012; for more information see: <http://www.nif.nu/site/seminarRedirect.asp?intSeminarID=459&p=1004>.
  - Download an Open Source ebook: Understanding Stoves For Environment and Humanity by Dr. N. Sai Bhaskar Reddy has been published by MetaMeta, The Netherlands; for more information see: <http://www.biochar-international.org/node/3690>.
  - New job postings at: <http://www.biochar-international.org/network/jobs>.
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## Upcoming Calendar Events

- October 27: Biochar Workshop for home gardeners, commercial and small-scale land users; location: Valley Ford, CA, US; more information: <http://www.biochar-international.org/node/3721>.
- October 30 – November 2: ECHO Asia Myanmar Workshop including a full day on Biochar for agriculture and mitigation of climate change; location: Yangon, Myanmar; more information: <http://www.biochar-international.org/node/3595>.
- November 6 – 9: Mobile Biochar Technology Comes to the Southern Oregon Woods; location: Oregon, United States; more information: <http://www.biochar-international.org/node/3677>.
- November 10: The Biochar Revolution: Healing Earth and Atmosphere; location: Tiburon, CA, US; more information: <http://www.biochar-international.org/node/3722>.
- January 17 – 18, 2013: 1st Mediterranean Biochar Symposium, Biochar: past, present and future; location: Italy; more information: <http://www.biochar-international.org/node/3581>.

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

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## Regional Biochar Group Updates

To read more on the 46 regional and national biochar groups, [please see IBI's website](#). This month includes updates from the Illinois Biochar Group (United States).

The Illinois Biochar Group (IBG) will be holding its fall meeting from 11 am to 4 pm on Nov. 16, 2012. The meeting will be at the Illinois Sustainable Technology Center on the campus of the University of Illinois, One. E. Hazelwood Dr., Champaign, IL. The meeting is open to everyone interested in learning and discussing more about biochar research and activities in IL and the surrounding states. Dr. Kevin Gibson from Purdue University will be the guest speaker and there will also be brief presentations given by 8 – 10 other scientists and others working on biochar. The full agenda will be posted on the [Illinois Biochar Group website](#) by Friday, Oct. 26. Registration is required only if you wish to order a boxed lunch for the meeting. Please contact [Nancy Holm](#), IBG coordinator if you have any questions.

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## 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](#).

- Andreev, Nadejda; María García Álvarez; Claudia Wendland; Friedemann Klimek; Mariska Ronteltap; Piet Lens (2012). A concept for a sustainable sanitation chain based on the semi centralised production of Terra Preta for Moldova. Presented at the 4th International Dry Toilet Conference. [http://www.drytoilet.org/dt2012/full\\_papers/4/Nadejda\\_Andreev.pdf](http://www.drytoilet.org/dt2012/full_papers/4/Nadejda_Andreev.pdf).
- Chen, C. R.; I. R. Phillips; L. M. Condrón; J. Goloran; Z. H. Xu; K. Y. Chan (2012). Impacts of greenwaste biochar on ammonia volatilisation from bauxite processing residue sand. *Plant and Soil*.
- Conte, Pellegrino; Valentina Marsala; Claudio De Pasquale; Salvatore Bubici; Massimo Valagussa; Alessandro Pozzi; Giuseppe Alonzo (2012). Nature of water-biochar interface interactions. *GCB Bioenergy*.
- Cowie, Annette; Lukas Van Zwieten; Bhupinder Pal Singh; Peter Quin; and Iain Young (2012). Biochar can enhance soil fertility and reduce greenhouse gas emissions. 16 Australian Agronomy Conference, 2012. [http://www.regional.org.au/au/asa/2012/climate-change/8277\\_cowiea.htm](http://www.regional.org.au/au/asa/2012/climate-change/8277_cowiea.htm).
- L Cui, G Pan, L Li, J Yan, A Zhang, R Bian, A Chang (2012). The Reduction of Wheat Cd Uptake in Contaminated Soil Via Biochar Amendment: A Two-Year Field Experiment. *BioResources*. 7(4) 5666-5676 [http://www.ncsu.edu/bioresources/BioRes\\_07/BioRes\\_07\\_4\\_5666\\_Cui\\_PLYZBC\\_Biochar\\_Wheat\\_Cd\\_Uptake\\_Soil\\_2Year\\_3226.pdf](http://www.ncsu.edu/bioresources/BioRes_07/BioRes_07_4_5666_Cui_PLYZBC_Biochar_Wheat_Cd_Uptake_Soil_2Year_3226.pdf).
- Fabbri, Daniele; Alessandro G. Rombolà; Cristian Torri; Kurt A. Spokas (2012). Determination of polycyclic aromatic hydrocarbons in biochar and biochar amended soil. *Journal of Analytical and Applied Pyrolysis*.

- Fulton, Will; Myles Gray; Fredrick Prah; and Markus Kleber (2012). A simple technique to eliminate ethylene emissions from biochar amendment in agriculture. *Biomedical and Life Sciences Agronomy for Sustainable Development*.
- Gogoi, Arunima; Talukdar, M. C.; Patgiri, D. K.; Ananta Dutta (2012). Biochar: impact on climate change and soil health. *Madras Agricultural Journal*. Vol. 99 No. 7/9 pp. 411-419.
- Itchon, GS; AU Miso Gensch R (2012). The Effectivity of the Terra Preta Sanitation (TPS) Process in the Elimination of Parasite Eggs in Fecal Matter: A Field Trial of Terra Preta Sanitation in Mindanao, Philippines. Presented at 4th International Dry Toilet Conference. [http://www.drytoilet.org/dt2012/full\\_papers/5/Gina\\_S\\_Itchon.pdf](http://www.drytoilet.org/dt2012/full_papers/5/Gina_S_Itchon.pdf).
- Kung, Chih-Chun; Bruce McCarl; Chi-Chung Chen (2012). Environmental Impact and Energy Production: Evaluation of Biochar Application on Taiwanese Set-Aside Land. <http://www.usaee.org/usaee2012/submissions/OnlineProceedings/Environmental%20Impact%20and%20Energy%20Production.pdf>.
- Liu, X.H. and X.C. Zhang (2012). Effect of Biochar on pH of Alkaline Soils in the Loess Plateau: Results from Incubation Experiments. *International Journal of Agriculture & Biology*. Volume 14: pages 745–750; [http://www.fspublishers.org/ijab/past-issues/IJABVOL\\_14\\_NO\\_5/10.pdf](http://www.fspublishers.org/ijab/past-issues/IJABVOL_14_NO_5/10.pdf).
- Mattila, Tuomas; Juha Grönroos; Jachym Judl; Marja-Riitta Korhonen (2012). Is biochar or straw-bale construction a better carbon storage from a life cycle perspective? *Process Safety and Environmental Protection*.
- McLeod, Malem; Peter Slavich; and Steve Harden (2012). Soil and pasture responses to poultry litter biochar combined with nitrogen fertiliser on a degraded red Vertosol in Tamworth, NSW Australia. 16 Australian Agronomy Conference, 2012. [http://www.regional.org.au/au/asa/2012/climate-change/8004\\_mcleodmk.htm](http://www.regional.org.au/au/asa/2012/climate-change/8004_mcleodmk.htm).
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- Revell, Kenneth T.; Maguire, Rory O.; Agblevor, Foster A. (2012). Field Trials With Poultry Litter Biochar and Its Effect on Forages, Green Peppers, and Soil Properties. *Soil Science*.
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- Shah, Ajay; Matthew J. Darr; Dustin Dalluge; Dorde Medic; Keith Webster; Robert C. Brown (2012). Physicochemical properties of bio-oil and biochar produced by fast pyrolysis of stored single-pass corn stover and cobs. *Bioresource Technology*.
- P. Shivaram; Y.K. Leong, H; Yang, D.K. Zhang (2012). Flow and yield stress behaviour of ultrafine Mallee biochar slurry fuels: The effect of particle size distribution and additives. *Fuel*.
- Singh, Bhupinder Pal; Annette L Cowie; and Ronald Josef Smernik (2012). Biochar carbon stability in a clayey soil as a function of feedstock and pyrolysis temperature.



Environ. Sci. Technol.

- Stewart, Catherine E.; Jiyong Zheng; Jorin Botte; M. Francesca Cotrufo (2012). Co-generated fast pyrolysis biochar mitigates green-house gas emissions and increases carbon sequestration in temperate soils. *GCB Bioenergy*.
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- Wu, Weixiang; Min Yang; Qibo Feng; Kim McGrouther; Hailong Wang; Haohao Lu; Yingxu Chen (2012). Chemical characterization of rice straw-derived biochar for soil amendment. *Biomass and Bioenergy*.
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- Yi, Qiguo; Fangjie Qi; Gong Cheng; Yongguang Zhang; Bo Xiao; Zhiquan Hu; Shiming Liu; Haiyan Cai; Shan Xu (2012). Thermogravimetric analysis of co-combustion of biomass and biochar. *Journal of Thermal Analysis and Calorimetry*.