January 2015 News from the International Biochar Initiative

2015 is the United Nations International Year of Soils

The International Year of Soils (IYS) 2015 is a year-long effort to highlight the importance of healthy soils and to advocate for sustainable soil management. The Food and Agriculture Organization (FAO) of the United Nations is implementing the IYS 2015 within the framework of the Global Soil Partnership and in collaboration with governments and the United Nations Convention to Combat Desertification. The IYS 2015 goal is to raise awareness among civil society and decision makers and educate the public about the crucial role soils play in food security, climate change adaptation and mitigation, essential ecosystem services, poverty alleviation, and sustainable development.

Many country-specific soil science societies will implement activities in their communities in support of the IYS 2015. Although biochar is not specifically named as part of the objectives of the IYS 2015, this year provides the biochar community a good opportunity to highlight biochar’s potential role in creating and maintaining healthy soils. IBI encourages regional biochar groups and biochar supporters to host local talks on biochar and soils and to reach out to media to highlight the role of biochar in sustaining soil health. We invite you to send us any information on your work in relation to the IYS 2015 for posting on our website. For more information on the IYS 2015, please see: http://www.fao.org/soils-2015/en.

IBI Welcomes Two New Board Members

IBI is pleased to announce that Dr. Annette Cowie and Tom Miles have joined the IBI Board for three year appointments. IBI thanks departing board members Dr. Andreas Hornung and Sununtar Setboonsarng for their service.

Dr. Cowie has a background in soil science and plant nutrition, with particular interest in sustainable resource management. She is a Principal Research Scientist in Climate at the Australian New South Wales (NSW) Department of Primary Industries. Her current research focuses on sustainability assessment and greenhouse gas accounting in agriculture and forestry; investigating key aspects of soil carbon dynamics and biochar processes; and life cycle assessment of forestry, bioenergy and biochar systems.

Mr. Miles of T.R. Miles Technical Consultants is interested in the thermal conversion of biomass for beneficial use and has expertise in the transformation of ash in wood, straws, stalks, and manures. He designs systems for biomass processing and
handling including densification, carbonization, gasification, power generation, and residue and nutrient management including biochar and composting. Mr. Miles sponsors and hosts internet discussions which focus on biomass energy and biochar.

**February IBI Webinar Series Event: Jonah Levine, EcoChar Manager at Confluence Energy LLC presents, Biochar Production and Utilization: Data, Photos and Opportunity for Real World Dialogue**

Are you interested in getting an inside look at two different biochar production methods? On February 12, 2015 IBI welcomes Jonah Levine, EcoChar Manager at Confluence Energy LLC, to give a presentation titled, “Biochar Production and Utilization: Data, Photos and Opportunity for Real World Dialogue”. This talk will include two production examples: 1) a large integrated plant that drives conversion with pyrolysis and delivers the gas to a heating application; and 2) a stand-alone carbon-optimized gasification system that flares post-production gas. The presentation will also include photos and data from reclamation applications in Colorado, USA. Registration is now open for the webinar, which will be held on Thursday, February 12th at 1:00 pm Eastern Time. Note: Please convert the 1:00 pm ET start time to your local time by using this time converter tool. You must be a dues-paying member to participate in these special events. If you are not an IBI member and would like to join, please click here.

For more information on this webinar program, including links to past presentations by Dr. Steven McGreevy (Research Institute for Humanity and Nature, Kyoto, Japan), Dr. Johannes Lehmann (Cornell University, USA), Dr. Isabel Lima (US Department of Agriculture), Art Donnelly (Estufa Finca Project Director & Seachar), and Dr. Andreas Hornung (Fraunhofer Institute for Environmental, Safety, and Energy Technology (UMSICHT) leader), please see http://www.biochar-international.org/webinar_series.

**New IBI Business Member: Antaeus International Pty Ltd**

A listing of all current IBI Business and Organization Members can be found on our website. For more information on membership opportunities and benefits, or to join, please see: http://www.biochar-international.org/join. Please note, Business and Organization descriptions are submitted by each individual entity, and are not developed or written by IBI.

**Antaeus International Pty Ltd**, established in Canberra Australia in 2013, operates in the environmental asset and project management sectors. Antaeus is a special purpose holding company which brings together a consortium of technologists, technologies, and methodologies (some of which are patented) to develop a vertically integrated carbon negative set of projects into an amorphous whole (which Antaeus is calling Green Valley Projects – GVP). These projects relate to renewable fuels, renewable/sustainable energy, the development of the biochar industry, and agricultural initiatives to improve not only the return on investment on herds (e.g. improvement in body mass for beef cattle) to the extra butter fat produced by dairy cows, but an improvement/reduction in the methane production of the same herds. All of these issues and more are the mainstream of Antaeus research, development, project development, and growth. For more information, please see www.antaeusinternational.com.
Biochar Briefs: News Roundup for January

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

Germany
In an industrial area in eastern Berlin, Dennis Raetzel and his project partner, Gregor Pieplow, make their own Terra Preta soil for their garden using collected kitchen waste in buckets. Once a bucket is filled, they layer organic material and charcoal and let it sit in a warm, airtight container for about a month. The mixture is then brought to the garden, and with the help of worms and other organisms, it's converted into Terra Preta soil.

Nepal
Based on the high amount of Kalimati (black soil) in low lying lands of the Kathmandu valley, researchers are investigating whether inhabitants may have been purposefully producing and using biochar for centuries to increase productivity, with the added benefit of decreasing methane emissions, from rice farming.

Philippines
The Clean River Zone Biochar Community initiative is a consortium of partners working to clean up an estuary using bokashi balls (made from dried mud and other organic materials, including biochar) to filter polluted water. Part of the project entails project volunteers interacting with local community members through education and water testing. The project submerged 2000 bokashi balls in the estuary water over a nine-month period (February to October 2014) and tested the water throughout the time period; by October the water quality was showing signs of improvement.

United Kingdom/United States
The Bartlett Tree Research Laboratory, part of Reading University, found that biochar can reduce tree stress from transplanting and drought. The trials showed that "young horse chestnut trees replanted in poor clay soil showed higher leaf chlorophyll content and improved photosynthetic efficiency of up to 12.5% over two growing seasons, with superior results from a more granular biochar compared to a powdered form".

United States
An article on Nature.com, quoting many leading researchers in the biochar field, highlights recent research on biochar and its potential as a soil amendment as well as for soil reclamation, water filtration, and other uses.

Biochar Adsorption Reference Database

Aqueous Solutions announces a free, open-access resource for the biochar research/implementation and low-cost water and wastewater treatment sectors. This is a periodically updated bibliographic reference database of peer-reviewed studies quantifying organic compound adsorption by biochars, broken down into compound categories such as "pesticides," "industrial compounds," "pharmaceuticals," and "natural compounds." For more information please see http://www.aqsolutions.org/?page_id=1430. Additionally, Josh Kearns of Aqueous Solutions recently presented a plenary, Removing toxic chemicals from drinking water using biochar, at the ECHO International Agriculture Conference in Fort Myers, Florida, USA in November 2014. To watch his presentation, see https://www.youtube.com/watch?v=YfaokPPh29o.
**Biochar as a Home-Site Water Purification System report wins at regional science fairs in the Philippines**

A project team from Vinzons Pilot High School, IV-Ampere in the Philippines composed of Mirasol M. Quinto, Mavy Ngo, Xeneth Avellana, Geraldine Ivy Ibasco, and Belle Gail Gan won first place at the Division and Regional Science and Technology Fair in October 2014 for their research paper entitled: *Pili (Canarium ovatum) Shells Biochar as Home-Site Water Purification System for Water Contaminated with Insecticide (Malathion)*. Then in November 2014, the research again won first place at the Regional Contest held in Legazpi City. Their paper is now qualified to be an entry in a national science contest.

The project team used only locally available materials to produce the biochar, and found that the biochar eliminated, through filtration, 99.9% of the Malathion insecticide residue from water. They hope their work will enable poor families to create their own water purification systems using local materials. To read more about their research and download the report, please see [http://www.biochar-international.org/teachers/schools#pili](http://www.biochar-international.org/teachers/schools#pili).

**Opportunities in Biochar**

- Take advantage of a free subscription to Biomass Magazine. More information is available at: [http://www.biochar-international.org/node/5537](http://www.biochar-international.org/node/5537).
- Job postings in biochar (as well as research/educational opportunities) can be accessed at: [http://www.biochar-international.org/network/jobs](http://www.biochar-international.org/network/jobs).
- Looking for potential grant funding? Check out the Terra Viva Grants Directory which develops and manages information about grants for agriculture, energy, environment, and natural resources in the world's developing countries at: [http://www.terravivagrants.org/Home](http://www.terravivagrants.org/Home).

**Upcoming Calendar Events**

- February 6: Conservation burn demonstration and Biochar workshop. Location: Sonoma, CA, USA. For more Information: [http://www.biochar-international.org/node/5989](http://www.biochar-international.org/node/5989)
- March 7 – 14: George Mason University Permaculture Design Certification Course. Location: VA, USA. For more information: [http://www.biochar-international.org/node/5561](http://www.biochar-international.org/node/5561)
- March 16 – 18: Climate Smart Agriculture 2015 Global Science Conference. Location: Le Corum, Montpellier, France. For more information: [http://www.biochar-international.org/node/5354](http://www.biochar-international.org/node/5354)
- April 12 – 17: European Geosciences Union (EGU) General Assembly; Biochar Session: Future challenges in biochar research. Location: Vienna, Austria. For more information: [http://www.biochar-international.org/node/5513](http://www.biochar-international.org/node/5513)
- April 14 – 18: 2nd International Conference on Biochar and Green Agriculture (BioGra2015). Location: Nanjing, China. For more information: [http://www.biochar-international.org/node/5988](http://www.biochar-international.org/node/5988)
• May 28 – 29: Biochar – Contribution to Sustainable Agriculture. Location: Potsdam, Germany. For more information: http://www.biochar-international.org/node/5510

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

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 infringement laws, 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.

• Bakry, Bakry Ahmed; Omar Maghaywry Ibrahim, Abdelraouf Ramadan Eid, Elham Abdelmoneim Badr (2014). Effect of humic acid, mycorrhiza inoculation, and biochar on yield and water use efficiency of flax under newly reclaimed sandy soil. Agricultural Sciences; DOI 10.4236/as.2014.514153
• Belinec A.S. , Bankina T.A., Rizhija A.Y., Buchkina N.P. (2015). The Use of the Protective Properties of Biochar for Optimising the Activity of the Soil Microorganisms, and Observations of

- Bingyuan, Li; Yong Kaixiang, Dong Youya, Han Xiaojia, Zhu Hong (2015). Effects of microwave irradiation on pyrolysis processes of biomass. Chinese Journal of Environmental Engineering
- Bo Ying, Guolin Lin, Lanshu Jin, Yuting Zhao, Tao Zhang, Jiaxi Tang (2014). Adsorption and degradation of 2,4-dichlorophenoxyacetic acid in spiked soil with Fe0 nanoparticles supported by biochar. Acta Agriculturae Scandinavica, Section B — Soil & Plant Science; DOI 10.1080/09064710.2014.992939
- Conte, Pellegrino and Nikolaus Nestle (2015). Water dynamics in different biochar fractions. Magnetic Resonance in Chemistry


• Diallo, Oumou (2015). Effect of Poultry Litter Biochar on Saccharomyces cerevisiae Growth and Ethanol Production from Steam-Exploded Poplar and Corn Stover. Thesis; Utah State University, Biological and Irrigation Engineering; http://digitalcommons.usu.edu/etd/3901


• Genesio, Lorenzo; Franco Miglietta, Silvia Baronti, Francesco P. Vaccari (2014). Biochar increases vineyard productivity without affecting grape quality: Results from a four years field experiment in Tuscany. Agriculture, Ecosystems & Environment; DOI 10.1016/j.agee.2014.11.021


• Han, Zhu Xin-Ping, Yang Chun, Jia Hong-Tao, Yao Hong-Yu (2015). Influence Factors of Microwave Thermal Remediation on Soil Contaminated with Crude Oil. Journal of Xinjiang Agricultural University; http://d.wanfangdata.com.cn/periodical_xjnydxxb201405012.aspx


• Ji-hui Li, Guo-hua Lv, Wen-bo Bai, Qi Liu, Yuan-cheng Zhang & Ji-qing Song (2014). Modification and use of biochar from wheat straw (Triticum aestivum L.) for nitrate and phosphate removal from water. Desalination and Water Treatment; DOI 10.1080/19443994.2014.994104

• Jing Ming, Li Ye, Chen Ying-Yu, Chen Jia-wei (2015). Geochemistry, Ore Deposits and Petrology: A Study on Cr Migration and Locking in Biochar-amended Soil. Geoscience


• Khanmohammadi, Zahra; Majid Afyuni, Mohammad Reza Mosaddeghi (2015). Effect of pyrolysis temperature on chemical and physical properties of sewage sludge biochar. Environmental Sciences

• Kim, Dongyeob; Nathaniel Mc Lean Anderson, PhD, and Woodam Chung (2015). Financial performance of a mobile pyrolysis system used to produce biochar from sawmill residues. Forest Products Journal; DOI 10.13073/FPJ-D-14-00052

• Kimura, Keitarou; Mayumi Hachinohe, K. Thomas Klasson, Shioji Hagiwara, Setsuko Todoriki, Shinichi Kawamoto (2015). Removal of Radioactive Cesium (134Cs plus 137Cs) from Low-Level Contaminated Water by Charcoal and Broiler Litter Biochar. Food Science and Technology Research; https://www.jstage.jst.go.jp/article/fstr/20/6/20_1183/_article


• Le Brech, Yann; Luc Delmotte, Jesus Raya, Nicolas Brosse, Roger Gadiou, and Anthony Dufour (2015). High Resolution Solid State 2D NMR Analysis of Biomass and Biochar. Analytical Chemistry; DOI 10.1021/ac504237c


• Liang, Shaobo; Yingli Han; Liqing Wei; Armando G. McDonald (2015). Production and characterization of bio-oil and bio-char from pyrolysis of potato peel wastes. Biomass Conv. Bioref.; DOI 10.1007/s13399-014-0130-x


• Sagrilo, Edvaldo; Tatiana Francischinelli Rittl, Ellis Hoffland, Bruno J. R. Alves, Herony U. Mehl, Thomas W. Kuyper (2015). Biochar decomposition under field conditions depends on its application rate. Book Chapter: 3 - Soil and plant responses to pyrogenic organic matter: carbon stability and symbiotic patterns


Singlaa, Ankit and Kazuyuki Inubushi (2014). Biogas byproducts affecting N2O, CO2 and CH4-production potential of Regosol soil under aerobic incubation. HortResearch


Xiang, Jian; Deyan Liu, Weixin Ding, Junji Yuan, Yongxin Lin (2015). Effects of biochar on nitrous oxide and nitric oxide emissions from paddy field during the wheat growth season. Journal of Cleaner Production; DOI 10.1016/j.jclepro.2014.12.038

• Xin Wang, Bo Peng, Changyin Tan, Lena Ma, Bala Ratnasabapathi (2015). Recent advances in arsenic bioavailability, transport, and speciation in rice. Environmental Science and Pollution Research; DOI 10.1007/s11356-014-4065-3


• Yuan, Haoran; Tao Lu, Hongyu Huang, Dandan Zhao, Noriyuki Kobayashi, Yong Chen (2015). Influence of pyrolysis temperature on physical and chemical properties of biochar made from sewage sludge. Journal of Analytical and Applied Pyrolysis; DOI 10.1016/j.jaap.2015.01.010


• Zhang, Qingzhong; ZhangLiu Du, Yilai Lou, Xinhua He (2014). A one-year short-term biochar application improved carbon accumulation in large macroaggregate fractions. CATENA; DOI 10.1016/j.catena.2014.12.009


