



## May 2017 News from the International Biochar Initiative

### Biochar related jobs, scholarships or volunteer opportunities

[Postdoctoral Researcher](#) in forest-based bioeconomy oriented towards biochar, Karlstad University, Karlstad, Sweden. Applications accepted through June 6, 2017.

Mechanical/Chemical [Project Engineer](#) at Haliburton Forest Biochar Ltd., Haliburton, ON, Canada

**Scholarships Available for U.S. College Students Doing Compost-Related Research; [CCREF Young Investigators Scholarship](#)**; applications accepted through June 30, 2017

#### IBI Volunteer Opportunity

IBI is looking to appoint an experienced Board Member at Large that is interested in spearheading IBI's Fundraising efforts. This person should have experience with identifying and obtaining grants related to agriculture, renewable energy and/or climate change on behalf of either non-profit or academic institutions. No geographic preference is required although a very strong capability in verbal and written English is necessary. For those interested, please send a letter of interest as well as an outline of relevant experience to [info@biochar-international.org](mailto:info@biochar-international.org).

### Biochar Webinar Series

Thank you to our May Webinar presenters Hans-Peter Schmidt, Kua Harn Wei and John McDonald-Wharry who provided an enlightening perspective on biochar building materials and composites. The video recording is available to all IBI members on the IBI members only page.

Previous webinars are accessible to IBI members for free via the Members Only page a few days after the Webinars take place. Non-members that would like to view previous 2017 webinars, may pay a one-time fee of \$40. Further information is available on our [Webinars Series page](#).

The June IBI Biochar Educational Webinar is scheduled for Wednesday June 28<sup>th</sup> from 1 – 2:30pm EDT. Mattius Gustoffson, project manager for the Stockholm Biochar Project, will provide an overview of their experiences and lessons learned in implementing the world's first pilot of carbonizing urban greenwaste. Registration details will be forthcoming shortly.

### New and renewing organizational & business member spotlight

*Note: corporate bios below were provided by members (or from websites) and not written by IBI*

New business member: Biomass Controls, LLC, Putnam, CT, United States



“Biomass Controls has over 100 years of combined experience in the control technology and data analysis industry. Our vision is to pioneer biogenic control technology for thermal and power applications. Our markets include woody biomass, biogenic waste as well as waste water and sanitation solutions. Our control technology is supported by Software as a Service (SaaS) accessible through our mobile and web application, Kelvin. Our research and development services support system integration and testing for improved efficiency and reduced emissions. Biomass Controls’ advantage is its research experience with high moisture fuels including four patent awards and over ten patents pending.”  
<https://www.biomasscontrols.com/>

## Regional Updates

[IBI Asia reports](#) that straw biomass is being turned into biochar and syngas which is used to mix the biochar with fertilizers. The system, developed by the Biochar and Green Agriculture Center led by Professor Genxing Pan at Nanjing Agricultural University, has been commercialized and has already charred 100,000 tons of straw. Plans are for 100 installations to char 5 million tons of straw per year by 2020. Currently there are over 30 projects using this system spread throughout Northern China.

Southern Asia: Shell continues to develop [IH<sup>2</sup> technology](#) at its newly built technology hub in Bangalore that will turn forestry, agricultural and municipal waste into transportation fuels while coproducing biochar. A [demonstration plant is being built in Bangalore](#) which can produce 1.5 tons of petrol or diesel per day from 5 tons of feedstock.

Europe: [Prof Mat Williams](#) and [Dr Saran Sohi](#) of [University of Edinburgh’s School of GeoSciences](#) will help assess the global potential for CO<sub>2</sub> removal into soil, as part of a consortium led by Prof Pete Smith at the University of Aberdeen. Soils can be enabled by higher organic matter, storing biochar and/or forming carbonate minerals – but the potential synergies with water, plants and biomass would need to be optimized by location. These synergies will be explored in this new work.

The Carbon Farming & Biochar Workshop held on May 20 in Romulus, NY was well attended. Reviews of the workshop have been provided by two different sponsors of the event: [Finger Lakes Biochar](#) and [America Sequesters](#). Video from the event should be available soon.

## Upcoming Calendar Events

- [Biochar from the Ground Up](#), June 12 – 16. Hosted by [The Farm](#), Summertown, TN. This workshop is focused on providing an overview of non-soil uses of biochar uses including its use in building materials, filtration, livestock farming, sewage sludge, and remediation. It will provide a review of research and current practices on uses, production, regulations and more.
- [European Biomass Conference & Exhibit EUBCE](#) June 12 – 15, 2017 Stockholm Sweden
- [Alpine hike of two days](#) to discover the ancient origins of the carbon in the soils of Pejo and its impact on alpine meadows and high-altitude larch. July 8 – 9, 2017, Stelvio National Park, Cogolo Pejo, Italy.

- [BIOCHAR AND SLOW-SAND BIOFILTRATION FOR POTABLE WATER](#) - 3 DAY INTENSIVE - AUGUST 1-3, 2017. Location: San Miguel de Allende, Mexico. Tuition: \$500. In this 3-day intensive course, participants will delve into theory and practical application of biochar adsorption for organic chemical contaminants – a growing concern in developing communities around the globe – and slow-sand filtration for biological water contaminants – the leading cause of water related illness and death in the world. Students will produce and process biochar and sand filtration media and install a full-scale 300 liter/day integrated treatment system in a local community. The course is presented by Caminos de Agua ([caminosdeagua.org](http://caminosdeagua.org)) and Aqueous Solutions ([aqsolutions.org](http://aqsolutions.org)).
- [Australia New Zealand Biochar Conference](#) August 10 – 12, 2017, Tweed, Australia. The aims and objectives of ANZBC17 are to bring together Scientists & Growers to bridge the gap between fundamental science, applied science & commercial applications, to unite the various Biochar groups from each State in Australia & New Zealand, to showcase the very latest technology to match the biomass source, value added bio-products, methods of applications and scientific results and commercial trial methods and results. Conference themes include: Technology & Production for matching sustainable biomass sources; Value added Bio-Products; Applied Science (Discoveries & Results); Commercial Applications (Methods & Results). Additional info can be found [here](#) and [here](#)
- [Biochar: Production, Characterization & Applications](#), Alba, Italy, Hotel Calissano, **August 20-25, 2017**
- [International Symposium on Growing Media, Soilless Cultivation, and Compost Utilization in Horticulture](#), **August 20-25**, in Portland OR. Attendees are welcome to submit abstracts and requests to give talks/presentations (or posters) during the meeting as well if desired.
- [2<sup>nd</sup> Second Global Soil Biodiversity Conference](#), October 15-19, 2017, Nanjing, China. Topic 15 is the *Biochar for soil biota and biodiversity* session. Session contact for abstract questions is: Dr. Genxing Pan. Email: [panggenxing@aliyun.com](mailto:panggenxing@aliyun.com); [gxpan1@hotmail.com](mailto:gxpan1@hotmail.com)
- The 2<sup>nd</sup> **China- Asian Biochar Workshop** is scheduled to take place during November 18-21, 2017. The theme of the workshop will be **Biochar Production and Application for Green Agriculture-from Technology to Viable Systems**. The workshop is aimed to enhance a joint exchange and sharing of the biochar developments between China and Asian countries and beyond, and an access to novel biochar technologies and viable systems for safe recycling of biowastes for green development. The venue of this workshop will be in **Wanda Hotel in Jinhua Municipality**, Zhejiang Province, China, which is a green city with a fast growing bioeconomy. Further details on the workshop can be found [here](#).

See the IBI Calendar page for more events. To add an event to the calendar, e-mail the information to the IBI newsletter editor, [Robert W. Gillett](#).

## **A Selection of Recently Published Biochar Research and Resources**

*Citations are from last month's new 'biochar' entries in the ISI Web of Science Core Collection*

Liu, N; Zhou, JL; Han, LJ; Huang, GQ      Characterization of lignocellulosic compositions' degradation during **chicken manure composting** with added biochar by phospholipid fatty acid (PLFA) and correlation analysis. SCIENCE OF THE TOTAL ENVIRONMENT 2017 586 1003-1011

Riaz, M; Roohi, M; Arif, MS; Hussain, Q; Yasmeen, T; Shahzad, T; Shahzad, SM; Muhammad, HF; Arif, M; Khalid, M Corn-cob-derived **biochar decelerates mineralization of native and added organic matter** (AOM) in organic matter depleted alkaline soil. GEODERMA 2017 294 19-28

Yargicoglu, EN; Reddy, KR Effects of biochar and wood pellets amendments added to landfill cover soil on **microbial methane oxidation**: A laboratory column study. JOURNAL OF ENVIRONMENTAL MANAGEMENT 2017 193 19-31

Li, PJ; Lin, KR; Fang, ZQ; Wang, KM **Enhanced nitrate removal by novel bimetallic Fe/Ni nanoparticles supported on biochar**. JOURNAL OF CLEANER PRODUCTION 2017 151-21 33

Yao, Q; Liu, JJ; Yu, ZH; Li, YS; Jin, J; Liu, XB; Wang, GH **Changes of bacterial community compositions after three years of biochar application** in a black soil of northeast China. APPLIED SOIL ECOLOGY 2017 113 11-21

Schimmelpfennig, S; Kammann, C; Murnme, J; Marhan, S; Bamminger, C; Moser, G; Muller, C **Degradation of Miscanthus x giganteus biochar, hydrochar and feedstock** under the influence of disturbance events. APPLIED SOIL ECOLOGY 2017 113 135-150

Jeffery, S; Abalos, D; Prodana, M; Bastos, AC; van Groenigen, JW; Hungate, BA; Verheijen, F **Biochar boosts tropical but not temperate crop yields**. ENVIRONMENTAL RESEARCH LETTERS 2017 12 53001

Weng, Z; Van Zwieten, L; Singh, BP; Tavakkoli, E; Joseph, S; Macdonald, LM; Rose, TJ; Rose, MT; Kimber, SWL; Morris, S; Cozzolino, D; Araujo, JR; Archanjo, BS; Cowie, **A Biochar built soil carbon over a decade by stabilizing rhizodeposits**. NATURE CLIMATE CHANGE 2017 7 371

Duan, ML; Li, HC; Gu, J; Tuo, XX; Sun, W; Qian, X; Wang, XJ Effects of biochar on **reducing the abundance of oxytetracycline, antibiotic resistance genes, and human pathogenic bacteria in soil and lettuce**. ENVIRONMENTAL POLLUTION 2017 224 787-795

Zhang, R; Zhang, YL; Song, LL; Song, XZ; Hanninen, H; Wu, JS **Biochar enhances nut quality of Torreya grandis and soil fertility** under simulated nitrogen deposition. FOREST ECOLOGY AND MANAGEMENT 2017 391 321-329

Meier, S; Curaqueo, G; Khan, N; Bolan, N; Rilling, J; Vidal, C; Fernandez, N; Acuna, J; Gonzalez, ME; Cornejo, P; Borie, F **Effects of biochar on copper immobilization and soil microbial communities** in a metal-contaminated soil. JOURNAL OF SOILS AND SEDIMENTS 2017 17 1237-1250

Wang, YJ; Li, FY; Rong, XM; Song, HX; Chen, JB **Remediation of Petroleum-contaminated Soil** Using Bulrush Straw Powder, Biochar and Nutrients. BULLETIN OF ENVIRONMENTAL CONTAMINATION AND TOXICOLOGY 2017 98 690-697

Li, ZG; Gu, CM; Zhang, RH; Ibrahim, M; Zhang, GS; Wang, L; Zhang, RQ; Chen, F; Liu, Y The benefic effect induced by biochar on **soil erosion and nutrient loss of slopping land** under natural rainfall conditions in central China. AGRICULTURAL WATER MANAGEMENT 2017 185 145-150

Gabhi, RS; Kirk, DW; Jia, CQ Preliminary investigation of **electrical conductivity of monolithic biochar**. CARBON 2017 116 435-442

Li, B; Yang, L; Wang, CQ; Zhang, QP; Liu, QC; Li, YD; Xiao, R **Adsorption of Cd(II) from aqueous solutions** by rape straw biochar derived from different modification processes. CHEMOSPHERE 2017 175 332-340

Essandoh, M; Wolgemuth, D; Pittman, CU; Mohan, D; Mlsna, T **Phenoxy herbicide removal** from aqueous solutions using fast pyrolysis switchgrass biochar. CHEMOSPHERE 2017 174 49-57

Huang, DL; Liu, LS; Zeng, GM; Xu, P; Huang, C; Deng, LJ; Wang, RZ; Wan, J The effects of rice straw biochar on indigenous microbial community and enzymes activity in **heavy metal-contaminated sediment**. CHEMOSPHERE 2017 174 545-553

Igalavithana, AD; Lee, SE; Lee, YH; Tsang, DCW; Rinklebe, J; Kwon, EE; Ok, YS **Heavy metal immobilization and microbial community abundance** by vegetable waste and pine cone biochar of agricultural soils. CHEMOSPHERE 2017 174 593-603

Wang, SX; Zhao, C; Shan, R; Wang, YZ; Yuan, HR A novel peat biochar supported **catalyst for the transesterification reaction**. ENERGY CONVERSION AND MANAGEMENT 2017 139 89-96

Hawthorne, I; Johnson, MS; Jassal, RS; Black, TA; Grant, NJ; Smukler, SM Application of biochar and nitrogen influences **fluxes of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O** in a forest soil. JOURNAL OF ENVIRONMENTAL MANAGEMENT 2017 192 203-214

Rechberger, MV; Kloss, S; Rennhofer, H; Tintner, J; Watzinger, A; Soja, G; Lichtenegger, H; Zehetner, F Changes in biochar physical and chemical properties: **Accelerated biochar aging in an acidic soil**. CARBON 2017 115 209-219

## **IBI Membership Opportunity for LDC residents**

IBI is seeking to expand its membership to include those living in the UN designated Least Developed Countries ([LDCs](#)). We are also interested in expanding the information about biochar activities in these 48 countries. As we understand that the IBI membership fee for developing country residents can be a steep barrier to membership, we would like to offer the opportunity of providing information to IBI about biochar projects or other activities in exchange for an annual membership. For those interested in more information on this service in exchange for membership opportunity, please send an email to: [info@biochar-international.org](mailto:info@biochar-international.org).

We encourage all those that have yet to renew their membership, to do so now via the [IBI website](#).

## **The IBI Online Biochar Training Course is Ongoing**

Gain in-depth knowledge on biochar and biochar systems. Register for IBI's online course, Biochar Training for Environmental Sustainability and Economic Development. This ten week, ongoing course provides participants an intensive training series on all aspects of biochar, presented by leading biochar experts. Learn about best-science updates on biochar, biochar production and use, how to overcome the barriers to commercialization. 19 separate lessons-each with a subject overview, a recorded audio/video presentation lasting 30 - 45 minutes and quizzes to test comprehension and retention. An optional introductory presentation on the basics of biochar allows participants to start the course with a common understanding. Course materials are presented in a user-friendly online format. Participants can access the course at their convenience over ten weeks and will receive a certificate of completion at the conclusion of the course.

Course materials are based on presentations from the June 2014 in-person biochar training course titled, "Biochar for Environmental Sustainability and Economic Development," hosted by the University of Santiago de Compostela, Spain, and developed and presented by IBI and collaborators. For more information on member and non-member pricing and registration, please see: [www.biochar-international.org/online\\_course](http://www.biochar-international.org/online_course)

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