March 2010 IBI Newsletter

29 March 2010

IBI 2010: September 12 - 16, Rio de Janeiro, Brazil

Submit an Abstract to Present

The Conference Science Committee will be accepting abstracts for presentations through April 15, 2010. If you are interested in presenting your work, please go to the conference website for more information on submitting an abstract: www.IBI2010.org.

Registration for the conference will open in the next month and we will be updating the conference website with information on travel and lodging, the agenda, and sponsors.

Become a Conference Sponsor

This venue will provide sponsors with exposure and access to an estimated 500 international delegates on site, with additional exposure via conference announcements, press, and the IBI website. IBI 2010 will also provide sponsors with the opportunity to demonstrate support and commitment to climate change solutions, sustainable land use practices, and food security.

If you or your organization is interested in becoming a conference sponsor, please see the following information on sponsorship opportunities: www.ibi2010.org/sponsoring-opportunitiesoportunidades-de-patrocinio or contact Thayer Tomlinson at info@biochar-international.org.

Survey Results

IBI invited members and prospective members to take part in a survey that closed on March 21. People from 47 countries responded. Thank you all for taking the time and for the detailed and thoughtful answers you provided to the many open-ended questions. We'll report on those when we have finished reading them. For now, we have some results from the multiple choice questions to share.

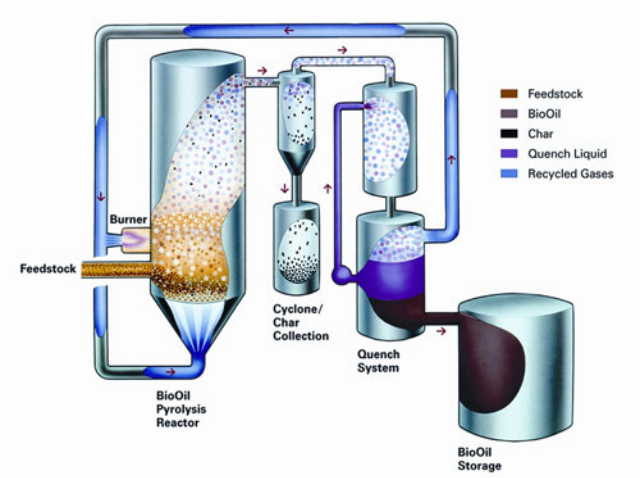
We asked you to rank IBI activities in order of importance. You chose the following as the top six: 1) Taking the lead in promoting sustainable biochar production; 2) Communication: website, newsletter, updates; 3) Support for research and critical analysis; 4) Technical and Agricultural information for practitioners; 5) Visibility/leadership in the field of biochar; 6) Educating policymakers about biochar.

We asked for your opinion on the quality of IBI communications and the results were: Excellent-34.5%; Good-53.7%; Fair-11.3%; Poor-0.5%. And we asked how satisfied you are with IBI as a whole with these results: Very satisfied-32%; Satisfied-50%; Neutral-15%; Dissatisfied-2%.

We found that 62% of respondents have a biochar project already underway. These range from backyard garden experiments to commercial farms and from small start up companies to large established companies. Many respondents are scientists and students working in academia on biochar research.

IBI has embarked on a strategic planning process to map out the way ahead in these challenging times and to create a strong organization that meets the needs of a very diverse membership. This member survey will provide crucial information as we move forward with this planning process. Please don't hesitate to contact IBI with your ideas about the future of biochar. It will take all of our best creative efforts to realize the promise of biochar.

Practitioner Profile: Dynamotive; Building Biochar Technologies and Markets



Dynamotive Energy Systems Corporation is a small but dynamic publicly-traded Canadian company led by former oil trader Andrew Kingston. Kingston's vision over the last decade as the CEO was to produce renewable energy from waste biomass rather than from food crops. With his grounding in the oil business, he realized early on that a robust distributed supply chain would be integral to the company's success.

The company's search for under-utilized waste led them to Erie Flooring and Wood Products, in West Lorne, Ontario, where piles of hardwood sawdust and wood chips could provide the ideal feedstock for Dynamotive's patented fast pyrolysis process. Today, Dynamotive's West Lorne pyrolysis plant has the capacity to process about 130 metric tons of dry biomass per day. The yield from the fast pyrolysis process of sawdust is about 70% bio-oil, 20% biochar and 10% syngas, which is recycled to provide fuel for the burner to heat the pyrolysis reactor. To read the remainder of this story, go to: www.biochar-international.org/dynamotive.

Diagram: The Dynamotive fast pyrolysis process; courtesy of Dynamotive

Practitioner Profile: Blue Leaf; Setting up Large-scale Field Trials in Canada

To date, very little data has been available on the effect of biochar on temperate soils, especially for field trials in commercial farming operations. One of the pioneers to research and field-test biochar in Canada is BlueLeaf Inc. BlueLeaf set up a biochar commercial farm field trial in the spring of 2008 and has been intensively monitoring the plots for two growing seasons.

Barry Husk, President of BlueLeaf, says he became interested in working with biochar after doing research on the subject on the Internet in 2007. Barry and his team had been developing techniques for reducing lake eutrophication caused by nutrient runoff from agricultural land, working with farmers located in a small watershed near Sherbrooke, Quebec, Canada. Soils of the area had become saturated with phosphorus after repeated applications of animal manures and chemical fertilizers. "We thought biochar could potentially fit well into local farmers' management systems and also address some serious problems related to phosphorus runoff from local soils contributing to algal blooms in our lakes." To read the remainder of this story, go to: www.biochar-international.org/blueleaf.

Photo: Field trial results in biochar-amended soils (top) vs. the control (bottom); courtesy of BlueLeaf Inc.

IBI Agricultural Extension Director Teaches Biochar Workshop in Chihuahua, Mexico

On February 25, IBI's Julie Major had the pleasure of teaching a biochar workshop in Spanish to apple growers and farmers of northern Mexico. Participants in the *V Congreso Nacional Orgánico del Manejo Integrado de Plagas, Nutrición y Enfermedades en el Manzano* (Fifth National Organic Congress of the Integrated Management of Pests, Nutrition and Diseases of Fruit Trees) held in Ciudad Guerrero, Chihuahua, learned basic concepts of biochar, why it is beneficial in soil, and practical aspects of using it in the field. A hands-on workshop followed the talk, where over 200 participants worked with biochar and soil to set up simple tests to assess the safety of biochar materials before using them on a larger scale. The event was organized by UNIFRUT, a fruit grower association representing 2,500 fruit growers who manage 35,000 ha of apple trees and 4,000 ha of peach trees.

While talking with participants, Julie learned that some producers in the region have been using biochar in soil successfully for over 10 years, but unsurprisingly the majority of participants had never heard of the idea. As in many apple growing areas, frost during flowering is a great threat to the future crop so many producers use fossil-fuel burning devices to warm the air near trees. One possible application of a biochar system could be the pyrolysis

of tree prunings in small field pyrolyzers to produce both heat and biochar for use directly in the soil.

Photo: Participants experimenting with biochar; courtesy of Julie Major

2nd Annual UK Biochar Research Centre Workshop April 2010

Building on the April 2009 launch of the UK Biochar Research Centre (UKBRC) in Edinburgh, a second annual meeting will be held at Rothamsted Research on Wednesday 28th and Thursday 29th April 2010.

The overall purpose of the workshop is to enable those interested in or actively researching biochar to come together and exchange experiences and learn of progress in the UK community from an inter-disciplinary perspective. The first day will involve keynote presentations setting the scene for biochar as an agricultural and carbon storage product, and identify the key research questions. The second day is dedicated to a detailed examination of emerging research data around biochar production, soil interactions, life cycle analysis, and economic appraisal. There will be no charge to attend and a complimentary sandwich buffet and refreshments will be provided each day.

For more information and to register, please see the conference website: www.geos.ed.ac.uk/sccs/biochar/rothamsted2010.

UKBRC is an alliance between researchers at University of Edinburgh, Rothamsted Research and Newcastle University, underpinned by a Science and Innovation award from EPSRC and with the additional backing of the Scottish Funding Council.

MIT Study Recommends Biochar for Community Forest Plantations

Planting Empowerment helps establish well-managed community owned plantations on previously deforested land in Panama. Pruning produces lots of waste wood fiber, so Planting Empowerment asked MIT students to evaluate potential uses of the material. After traveling to the area and learning about local market conditions, the MIT team concluded that the most economic use for the prunings was to produce biochar. Using biochar as the basis for a complex organic fertilizer mix would provide even greater profits. The report includes a basic business plan for a biochar enterprise and an outline guide to implementing a biochar process. The report is available on the Planting Empowerment website: http://www.plantingempowerment.com/70.html?m15:post=mit-biochar-report

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 published between December 2009 and March 2010. Please visit the website bibliography for more information on any of these articles. Due to copywriting, 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 so we can include it.

W.J.Busscher, Novak, J.M., Evans, D.E., Watts, D.W., Niandou, M.A.S., Ahmedna, M. "Influence of Pecan Biochar on Physical Properties of a Norfolk Loamy Sand." Soil Science 175 (2010): 10-14.

MJC Crabbe. "Modelling effects of geoengineering options in response to climate change and global warming: Implications for coral reefs." Computational Biology and Chemistry 33 (6) (2009).

David Granatstein, Chad Kruger , Harold Collins, Manuel Garcia-Perez and Jonathan Yoder. "Use of Biochar from the Pyrolysis of Waste Organic Material as a Soil Amendment." Center for Sustaining Agriculture and Natural Resources, Washington State University (2009).

M.Keiluweit, Nico, P.S., Johnson, M.G., Kleber, M. "Dynamic Molecular Structure of Plant Biomass-Derived Black Carbon (Biochar)." Environmental Science & Technology 44 (2010): 1247-1253.

Julie Major, Marco Rondon, Diego Molina, Susan J. Riha and Johannes Lehmann. "Maize yield and nutrition during 4 years after biochar application to a Colombian savanna oxisol." Plant and Soil. (2010).

J.A. Mathews. "From the petroeconomy to the bioeconomy: Integrating bioenergy production with agricultural demands." Biofuels, Bioproducts, and Biorefining 3 (6) (2009): 613 - 632.

M.P McHenry. "Carbon-based stock feed additives: a research methodology that explores ecologically delivered C biosequestration, alongside live weights, feed use efficiency, soil nutrient retention, and perennial fodder plantations." Journal of the Science of Food and Agriculture 90 (2010): 183-187.

J.M. Novak, Busscher, W.J., Watts, D.W., Laird, D.A., Ahmedna, M.A., Niandou, M.A.S. "Short-term CO_2 mineralization after additions of biochar and switchgrass to a Typic Kandiudult." Geoderma 154 (2010): 281-288.

D., Ozcimen, Ersoy-Mericboyu, A. "Characterization of biochar and bio-oil samples obtained from carbonization of various biomass materials." Renewable Energy 35 (2010): 1319-1324.

Kelli G. Roberts, Brent A. Gloy, Stephen Joseph, Norman R. Scott and Johannes Lehmann. "Life Cycle Assessment of Biochar Systems: Estimating the Energetic, Economic, and Climate Change Potential." Environmental Science and Technology 44 (2) (2010): 827 - 833.

Jeff Schahczenski. "Biochar and Sustainable Agriculture." A Publication of ATTRA-National Sustainable Agriculture Information Service IP358 (2010).

Christoph Steiner, K.C. Das, Nathan Melear, and Donald Lakly. "Reducing Nitrogen Loss during Poultry Litter Composting Using Biochar." Journal of Environmental Quality 39 (2010).

BB Uzun, AE Putun, E Apaydin-Varol, F Ates, and N Ozbay. "Synthetic fuel production from tea waste: Characterisation of bio-oil and bio-char." Fuel 89 (1) (2010): 176 - 184.

L. Van Zwieten, Kimber, S., Morris, S., Chan, K.Y., Downie, A., Rust, J., Joseph, S., Cowie, A. "Effects of biochar from slow pyrolysis of papermill waste on agronomic performance and soil fertility." Plant and Soil 327 (2010): 235-246.

H.L. Wang, Lin, K.D., Hou, Z.N., Richardson, B., Gan, J. "Sorption of the herbicide terbuthylazine in two New Zealand forest soils amended with biosolids and biochars." Journal of Soils and Sediments 10 (2010): 283-289.

A.R. Zimmerman. "Abiotic and Microbial Oxidation of Laboratory-Produced Black Carbon (Biochar)." Environmental Science & Technology 44 (2010): 1295-1301.

New Biochar Books

IBI was pleased to receive a copy of The Biochar Debate by James Bruges (Chelsea Green, 2010). This small book provides a useful overview of biochar science written for the general reader, along with a discussion of the larger environmental and social contexts of biochar adoption. The "debate" referred to in the title is not over the value of biochar as a soil amendment, but whether or not carbon offset credits are the right mechanism to encourage the growth of biochar. Bruges is from the "small is beautiful" school of E. F. Schumacher, and he believes that transnational financial schemes have little chance of benefiting small farmers. The most interesting part of the book is the several case studies Bruges presents of biochar use in villages in India, Africa, and Central America.

Another recent book with significant material on biochar is Al Gores' Our Choice: A Plan to Solve the Climate Crisis (Rodale Books, 2009). In the chapter on soil, Gore discusses the importance of carbon in soil for both climate stabilization and food security. To increase soil carbon worldwide, Gore recommends a number of organic and conservation agriculture practices including the use of biochar "in a carefully managed, publicly subsidized global program". Our Choice also comes in a Young Reader's Edition that will be very useful for anyone doing biochar education with children.

IBI Website Highlight: Research and Education

The number of academic and research of programs that focus on biochar have greatly expanded over the last 5 years. Both institutes of higher education as well as research institutions are developing biochar programs and teaching positions with some becoming quite large and well funded. To highlight these institutions, IBI is tracking both the research coming out on biochar (see the biochar bibliography at: www.biochar-international.org/biblio), as well as tracking the institutions themselves. The IBI webpage Research and Education (www.biochar-international.org/research/education) provides links to institutions with biochar programs listed by country.

IBI also posts opportunities for graduate and PhD-level research at these institutions on our Jobs page at: www.biochar-international.org/network/jobs.

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 includes a new regional initiative: the Sonoma Biochar Initiative (SBI) from California, US as well as updates from the Pioneer Valley Biochar Initiative (PVBI) US, and the China-CAU Biochar Initiative.

Sonoma Biochar Initiative (California, US)

A group is forming in the city and county of Sonoma, California (United States) to promote biochar. The Sonoma Biochar Initiative (SBI) will promote biochar production and application in the Sonoma Valley area. SBI will seek strategic partners and a non-profit umbrella organization with the goal of educating local agricultural operations, local government, and other stakeholders on the advantages of biochar as a tool for GHG reduction while enhancing agriculture. SBI will advance biochar as the "fast mitigation technology" cited in international climate talks by advocating protocols already under discussion at the California Climate Reserve and inclusion of biochar to advance Sonoma County's Climate Action Plan (www.coolplan.org). SBI will seek funding to establish a demonstration project for biochar production and application, experimenting with agricultural and urban yard waste feedstocks. For more information on this initiative, please see: www.biochar-international.org/sonoma

Pioneer Valley Biochar Initiative (Massachusetts, US)

The PVBI has been involved in many projects both using biochar and creating educational materials/opportunities to showcase biochar. Selected events/projects include:

PVBI is undertaking a project using inoculated biochar with various strains of beneficial soil microbes to fight the American Chestnut Blight. These microbes can also be used to reduce the damage caused by "water mold" blights that affects potato and tomato farming.

The group is interacting with Sustainable Harvest International (SHI) (www.sustainableharvest.org) which is using biochar to facilitate sustainable cacao agriculture in Central America. PVBI will meet with SHI's Major Gifts Coordinator to discuss plans for a fall 2010 biochar workshop in Central America.

Moving forward, the primary role of the PVBI will be working with local farms in an effort to explore ways to render sustainability through the use of biochar. Facilities for demonstrating the production and use of biochar and establishing a means for its characterization are being set up at the New England Small Farms Initiative (NESFI) facility.

For more information on PVBI, please see: http://pvbiochar.org.

China-CAU Biochar

Following up on the successful Beijing Biochar International Workshop held last October, the China-CAU Biochar group has continued its work at a rapid pace. In the laboratory, we have made a series of biochar samples with different biomasses, including the stem of *Eupatorium adenophorum*, an invasive plant in southwest China. Basic properties of these biochars were compared and two vegetable pot experiments were set up. A 6-treatment field experiment has been carried out since June 2009, a picture of which could be found on Google-earth (see photo). Two treatments with biochar made from winter wheat straw and maize straw were involved in this experiment. The total amount of biochar used was about 6500 kg/ha, made by wheat stem with simple oven on site.

In 2010, several experiments will be carried out in China-CAU, including a new biochar-making oven design and experiment, biochar's effect on yield and quality of greenhouse vegetables biochar's effect on soil chemical processes in calcareous soil, and the improvement of soil fertility of urban garden soils. Meanwhile, the network of biochar field experiments is under discussion and will be built over all of China, to focus on improving cropland fertility and crop production

As the first IBI regional group in China, China-CAU introduced biochar experimental sites to other IBI members, such as the Biochar Yunnan Project of FAO and have had good discussions with groups such as Ingenieur des Mines de Nancy, Chinagreenzone, Sigma Innova LLC, and the Blue Moon Fund.

For more information, please see: www.biochar-international.org/regional/china.