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

March 2015 News from the International Biochar Initiative

April *IBI Webinar Series* Event: Dr. Sai Bhaskar Reddy Nakka presents, "Biochar Sustainability in Developing Countries"

For those interested in the biochar challenges and opportunities present in developing countries, this month's webinar is for you! IBI welcomes Dr. Sai Bhaskar Reddy Nakka of Geoecology Energy Organisation (GEO), India, for our April *IBI Webinar Series* event. Dr. Sai will explore the challenges of biochar sustainability in developing countries, where poverty, soil fertility management, food security, and ecological sustainability are important variables for biochar systems. Poor farmers in developing countries are most adversely affected by climate change, and semi-arid and arid lands with degraded soils are highly vulnerable. The sustainable production of biochar from various types of biomass needs to be explored without over-exploiting natural resources, and there is a need to adopt a definition of "biochar" broadly for these systems, including those biochars that are derived from diverse feedstocks.

Dr. Sai asserts that biochar is a means to improve the livelihoods of many communities in developing countries. The size of farmers' fields, economics of biochar application (with and without subsidies), apart from other input costs, is a major concern. He believes biochar should not be considered an exclusive product; it should be integrated with multiple soil solutions for maximizing its value before finally being used as soil amendment. The use of biochar could be flexible for large scale adoption and also for local production by communities in developing countries. Dr. Sai is the author of Biochar Culture.

Registration is open now. The webinar will be held on Tuesday, April 14th at 9:30 am Eastern Time. Note: Please convert the 9:30 am 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 prior 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), Dr. Andreas Hornung (Fraunhofer Institute for Environmental, Safety, and Energy Technology (UMSICHT) leader), Jonah Levine (Manager at Confluence Energy LLC), and Doug Phillips/Dave Warne/Anna Carrucan (Greening Australia), please see: http://www.biochar-international.org/webinar_series.

Renewing IBI Business and Organization Members

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.

Renewing Business Members

Cool Planet Energy Systems

Cool Planet is a developer of solutions for the energy, food and water industries with drop-in fuels and advanced biochar products. We are commercializing technology to create green fuels and biochar in a way that can change the world for good. Our green fuels are chemically identical to fossil fuels, and our "CoolTerra™" enhanced biochar enables fertilizer reduction and increased water retention for increased crop productivity and robust plant health, even in a drought-constrained environment. Cool Planet puts raw biochar through a series of post-processing steps to neutralize pH, increase nutrient retention, and microbially condition the pores to support optimum microbiology. Only after these steps does it become CoolTerra™. Cool Planet's technology has a broad portfolio of technology and IP, and includes premier investors like BP, Google Ventures, GE, ConocoPhillips, Exelon, and NRG. For more information on CoolTerra™ and Cool Planet, please see: www.coolterra.com

FLORENTAISE

FLORENTAISE was founded in 1973 and is the French leader in substrates and mulches with 100 employees, seven manufacturing plants in France and sales of US$40 M. FLORENTAISE has a strong international presence with HORTIFIBRE, a sustainable wood fiber manufactured by the company and incorporated in consumer and professional substrates, particularly in Europe and the US. Launching sustainable products for plants, cultures, food and health is part of the FLORENTAISE strategic approach.

FLORENTAISE produces and distributes its own biochar, branded Greenchar—the result of green waste pyrolysis. It acts as a catalyst for fertilizers and as a soil improver. The manufacturing process locks the green waste carbon within the material and makes it a highly sustainable product with a negative carbon impact. Greenchar mixed with a substrate can increase crop yields for many years. For more information, contact Jean-Pascal Chupin through http://www.florentaise.com/en

Sonnenerde

Sonnenerde (or "sun-earth" in German) is an Austrian company which produces high quality soil from compost; selling about 30,000 tons annually. Sonnenerde looks to raise the carbon content of soils and is building a pyrolysis plant to produce biochar. They have been working with researchers at the University of Halle, Germany on three acres of test plots. They are looking to convert 4,000 tons of wet paper fiber sludge into 300 tons of biochar per year.

Since 2014, Sonnenerde has been selling a *Terra Preta*-like soil (called *Riedlingsdorfer Black Soil*) as well as a biochar-based product: the "soil-activator". This soil activator is composed of nitrogen, trace elements, and microorganism-enriched biochar; it works like a fertilizer in the first year and start the humus building process in the soil at the same time. The two products are sold to large garden centers in Austria and Slovenia. Sonnenerde was the winner of the climate-saving award 2012 in Austria. Visit the company's website (www.sonnenerde.at) to view a movie about the company, the new biochar plant, and recent experiments.

Renewing Organization Member

Growth Alternatives in Action (GAIA) International Inc.

GAIA International, Inc. (Growth Alternatives In Action) is a 501(c)(3) nonprofit organization, founded in 2013, by students at Arizona State University. GAIA International works in rural, underdeveloped communities where poor nutrition is a major health concern. GAIA's focus is on creating long-lasting partnerships with farmers in these communities, in order to help them implement sustainable agricultural methods into their farming practices.

GROWTH ALTERNATIVES IN ACTION
"SUSTAINABLE LIVING THROUGH TECHNOLOGY"

At GAIA International, biochar initiatives are based on the understanding that success in agriculture relies deeply upon the fertility of the soil. Therefore, GAIA's methods are directed at helping farmers to improve their soil quality in order to increase their crop yields. At the same time, GAIA teaches its farmers how to conserve their natural resources and maximize their profits. At GAIA, there is a compelling vision to improve the lives of those at the bottom of the pyramid, through agriculture, by providing smallholder farmers with the tools and knowledge to empower themselves. For more information, see www.gaiainternational.org

Profile: EcoFarm: Facilitating an international collaboration to install biochar technology in Vietnam

Vietnam is one of the fastest growing economies in Asia. However, the country also holds the distinction of being one of the world's most susceptible countries to the negative effects of climate change through droughts, floods, cyclones, and rising sea levels. In addition to the damage to cities and infrastructure, climatic effects will most likely alter agricultural systems. Ecology Farming Corporation (EcoFarm) began in 2007 with the mission to increase agricultural sustainability and adaptability to increasing changes in weather patterns in the country. The organization has many farming sites around Vietnam and focuses on promotion of local products, environmental protection, enhanced manufacturing techniques, and improved local living standards.

EcoFarm is adamant about what they refer to as Climate-Smart Agriculture—using agricultural practices for increased resiliency and thereby food security, mitigating climate change impacts, and improving product yield. As Mr. Nguyen Hong Quang, the founder of EcoFarm, and his colleague Dr. Nguyen Huu Ninh were investigating innovative agricultural technologies for use on the farm sites, they identified biochar as an ideal fit for one of their farm sites in Vietnam. With their diverse range of skills and expertise, Mr. Quang and Dr. Nguyen proved to be an excellent team. Mr. Quang is a successful and self-made businessman and Dr. Ninh is a professor and Nobel Laureate for his contribution to the 2007 International Panel on Climate Change report. Together in 2013, they wrote a proposal to the VBCF (Vietnam Business Challenge Fund) and won a grant to create farmer cooperatives—which included the purchase of biochar production technology.

Building the Team: The EcoFarm Corn Project

The funded work established an *EcoFarm corn project* at Duc Hoa district in Long An province. The project's main components include the training of local farmers to switch from solely rice to both rice and corn production and the establishment of corn growing cooperatives. Corn is the main feed for pigs and other livestock in Vietnam and most of the corn is imported. As Vietnam works to rely less on imports, corn is a valuable crop to start growing in country. The project supplies cooperatives with seeds and soil amendments (fertilizer and biochar) at lower prices, and supports farmers by leasing machinery (such as planters and harvesters) to the cooperatives free-of-charge. After harvesting, EcoFarm buys all the corn and collects the rice husks and corn stover as feedstocks for a pyrolysis system.

To read more about this work, please see: http://www.biochar-international.org/profile_EcoFarm.
Photo: Mr. Quang had his staff at EcoFarm incorporate biochar into the fertilizer blends for their fields. They have seen positive results from the product and are excited to expand production with the newly installed technology. Courtesy of Josiah Hunt.

Profile: Profitability Improvements from Enhanced Biochars: Results from a Potato Farm in Ballarat, Victoria, Australia

By René de Jong, Buninyong, Victoria, Australia and Stephen Joseph, Visiting Professor University of NSW, Nanjing Agricultural University, University of Newcastle, Wollongong and Central Queensland

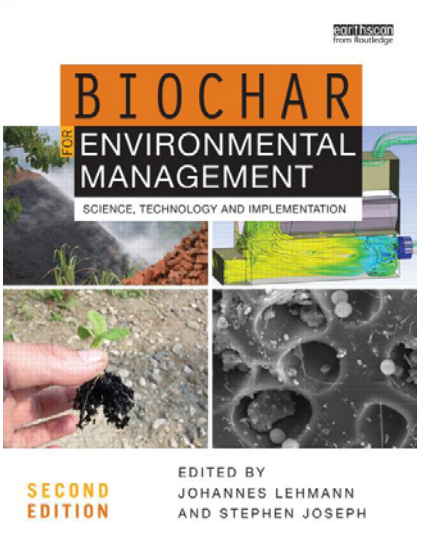
Although there is a great deal of research on the effect of enhanced biochars on crop growth, there are few studies looking at the overall impact on economic profitability for farmers. In 2013, a workshop on enhanced biochars was held in Ballarat, Australia and sponsored by BREAZE (Ballarat Renewable Energy and Zero Emissions) and CHAF (Central Highlands Agriculture Forum). After the workshop, participants were interested in setting up specific trials with enhanced biochars. Researcher René de Jong volunteered to organize trials with a local farmer who grew seed potatoes to test biochar/fertilizer blends on crop growth. These trials were conducted in a non-replicated potato trial in the potato growing region of Ballarat during 2013 – 2014. The potato crop was grown for certified seed potatoes; therefore, potato count and a high yield of small-sized potatoes were the desired outcomes.

To supply the trials, Stephen Joseph working at the University of Newcastle (Australian and New South Wales) and Russell Burnett, of the Australian company BES, developed an enhanced biochar that was formulated to reduce the amount of fertilizer normally used by local potato farmers. The biochar feedstock was a combination of 60% wheat straw, 25% poultry manure, 5% clay, 4% basalt dust, and 6% wheat straw ash. The feedstock components were first mixed and then loaded into the hopper of a continuous trough pyrolyzer (figure 1), and while still hot, the biochar surface was activated with phosphoric acid to bring the pH down to 6.8 (H_2O).

To read more about this work, please see: http://www.biochar-international.org/profile_Potatoes_in_Australia
Photo: Loading and operation of the pyrolyzer; courtesy of the project.

2nd Edition of *Biochar for Environmental Management* Ready for Order

The second edition of *Biochar for Environmental Management: Science, Technology and Implementation,* edited by Johannes Lehmann and Stephen Joseph, is now available for order. Since the first edition of this biochar text was published in 2009, the biochar community has seen numerous biochar-specific conferences, a significant increase in biochar research and publications, in-depth news coverage, and a growing commercial industry.



The second edition of the text includes 31 chapters; not only substantially updated chapters based on information in the first edition, but also additional chapters on environmental risk assessments; new uses of biochar in composting and potting mixes; the effects of biochar on soil carbon cycles; changes in water availability and soil water dynamics; recent discoveries on historical biochar use in the Amazon, Africa and Asia; and sustainability and certification. The book continues to represent the most comprehensive compilation of current knowledge on all aspects of biochar.

The publisher, Routledge, is offering IBI dues-paying members a 20% discount off the purchase price as well as access to a digital version of the preliminary pages and the first chapter by logging into their profile at: https://ibi.memberclicks.net/login. To read more about the publication and order a copy, see http://www.routledge.com/u/routledge/Biochar.

New Report on Biochar and Biological Phosphorus Removal at Shelburne Farms, Vermont, USA

A group of Dartmouth University students recently published their research on examining biochar as a tool for remediating runoff from compost piles at Shelburne Farms in Vermont, USA. Students Kris Brown, Sarah Hammer, James Kennedy, Tim Serkes, and Kamau Wanjiru looked to reduce phosphorus concentrations from runoff at Shelburne Farms and to outline a pathway towards incorporating biochar into Sequencing Batch Reactors (SBR) as a means of effectively promoting Enhanced Biological Phosphorus Removal (EBPR). The report includes probable financial costs and informational benefits that a pilot-scale treatment unit could provide towards the design of a full-scale treatment unit. To read the report in full, see: http://www.biochar-international.org/sites/default/files/Shelburne_Farms_2015.pdf

Opportunities in Biochar

- Take advantage of a free subscription to Biomass Magazine. More information is available at: http://www.biochar-international.org/node/5537.
- Download the open access biochar book: *Biochar Culture*, by Dr Sai Bhaskar Reddy Nakka. The text highlights the use of biochar in communities and its potential for increased sustainable agriculture in smaller scale farmsteads and homes, focusing on work in India. The book can be accessed at: http://www.biocharculture.com.
- Job postings in biochar (as well as research/educational opportunities) can be accessed at: 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.

Upcoming Calendar Events

- April 4: Spiral Living Center Biochar Intensive. Location: Cave Junction, OR, USA. For more information: http://www.biochar-international.org/node/6347
- April 6: Biochar Malaysia Workshop 2015. Location: Faculty of Engineering, Universiti Putra Malaysia. For more information: http://www.biochar-international.org/node/6356
- 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
- April 14: IBI Webinar Series, Dr. Sai Bhaskar Reddy Nakka presents, "Biochar Sustainability in Developing Countries". For more information: http://www.biochar-international.org/webinar_series
- 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
- April 16 – 18: NE Biomass Heating Expo (with biochar session). Location: Portland, ME, USA. For more information: http://www.biochar-international.org/node/6352
- April 16 – 21: 3rd International Biochar Training Course. Location: Nanjing, China. For more information: http://www.biochar-international.org/China_training_2015
- April 20 – 22: International Biomass Conference and Expo. Location: Minneapolis, MN, USA. For more information: http://www.biochar-international.org/node/5536
- April 20 – 24: III International Symposium on Organic Matter Management and Compost Use in Horticulture. Location: Murcia, Spain. For more information: http://www.biochar-international.org/node/5389
- May 28 – 29: Biochar – Contribution to Sustainable Agriculture. Location: Potsdam, Germany. For more information: http://www.biochar-international.org/node/5510
- June 1 – 4: 23rd European Biomass Conference and Exhibition. Location: Vienna, Austria. For more information: http://www.biochar-international.org/node/5361
- June 24 – 27: Biochar: a sustainable solution for agriculture and environment at BiocharEXPO 2015. Location: Milan, Italy. For more information: http://www.biochar-international.org/node/5950
- July 5 – 10: Soil interfaces for sustainable development (with colloquium on Biochar in Agriculture and Environment). Location: McGill University, Montreal, Quebec, Canada. For more information: http://www.biochar-international.org/node/6250

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.

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