December 2012

2012 Year in Review and Looking Forward to 2013

By IBI Executive Director, Debbie Reed

2012 has been a very busy year for us at IBI as we continue to work to support the biochar community and to bring biochar into the mainstream. I want to thank each and every member, contributor, and stakeholder for your continued generous support for our work. Your contributions, engagement and feedback are essential elements of our work, and we hope that our joint accomplishments and achievements are beneficial to your work, as well. It is clear that the strong and vibrant biochar movement continues to grow and to reach new communities and new phases as we learn more about the incredible potential of biochar. As this year draws to a close, I'd like to briefly share some of our accomplishments and provide some thoughts for what we hope to achieve in 2013. As always, I am interested in hearing your thoughts so please continue the conversation with us to "*Put the Earth Back into the Black*" through use of biochar.

With our membership support and the generous support of our funders, we have a great deal of progress to report from 2012. Before reviewing the highlights, I would like to heartily thank those members who have joined and renewed their IBI membership in 2012. Many individuals and groups deserve special thanks and recognition for all their work and support. We have strong and continued support from The David and Lucile Packard Foundation and the Blue Moon Fund (BMF), to whom we owe special thanks. This year we also received generous support from the Putnam Foundation, The Climate Trust, and The Wellspring Foundation, and we are grateful for these new and ongoing collaborations. In addition to the work, leadership, and direction from our dedicated international Board of Directors, we have an active 28-person volunteer Advisory Committee, all of whom devote time and equity to our efforts. Finally, I would like to especially recognize and thank IBI's terrific cadre of hard-working staff, who are the creative and dedicated engines that make IBI work and that deliver the services and benefits of IBI to the international biochar community. We are proud to report the following successes in 2012, virtually all of which are ground-breaking efforts in the biochar field:

- IBI Biochar Standards
- IBI Biochar Certification Program
- Test Methodology for Biochar Carbon Stability
- IBI Biochar Sustainability Guidelines
- IBI Guiding Principles for a Sustainable Biochar Industry
- Communications
- U.S. Biochar Study Tour
- Biochar Project Tracking and Reporting
- Research Support
- Conference Support
- Biochar Media Coverage

IBI's Board and staff have been engaged in many other related efforts on behalf of the global biochar community, including presenting at regional and national biochar conferences, continuing to spread the word on biochar and IBI, and increasing our communications and outreach materials. And of course, you, the members of this community, have aided us in all aspects of our work, and we owe you our continued gratitude for your input, participation, and support of IBI.

In the next year, IBI plans to focus our work on continued support for the successful implementation of

sustainable biochar endeavors at all scales, to benefit soil health and productivity and to combat global climate change. We believe that sustainable and well designed projects with measureable impacts will most benefit biochar implementation and acceptance worldwide by providing operational models that can be replicated. As part of this project focus, we will:

- Continue to support policy efforts which can increase support for biochar research, development, demonstration, and deployment, at national and international levels.
- Finalize and launch the IBI Biochar Certification Program.
- Continue working on a Biochar Offset Protocol, with our partners, including The Climate Trust, who is leading this effort.
- Draft full Biochar Sustainability Guidelines with community input.
- Increase biochar project and commercialization data tracking to better provide a fuller picture of what is happening in biochar around the world.
- Continue to publicize biochar news, projects, events and research through our website, newsletter, and regional and national conferences.
- Continue to support and participate in the many international biochar conferences.

We thank you for a full year and extend our warmest wishes to you in the New Year. We ask for your continued support as we expand the services we offer and create new programs. Please help us raise the resources we need to support greater development of sustainable biochar by joining with a new membership or renewing your existing membership today, and if possible, please consider contributing at a higher level. For those who are existing members, please consider an additional donation to IBI in your end of year giving.

Thank you again for your support of IBI and biochar. Please feel free to contact me with questions or comments on IBI.

Regards,

Debbie Reed, Executive Director, IBI

Please read the details of our year at: http://www.biochar-international.org/2012_year_in_review.

IBI Publishes Guiding Principles for a Sustainable Biochar Industry

After extensive review by a global panel of biochar practitioners, researchers, and other stakeholders, IBI recently published its *Guiding Principles for a Sustainable Biochar Industry*. The principles are intended to provide high-level guidance on environmental, social, and economic issues that may arise during the entire life cycle of biochar projects, from “cradle to cradle”. The principles are intended to guide the work and development of the global biochar community in a responsible, sustainable manner, and will serve as an umbrella for IBI’s work, as well, including development of IBI’s *Biochar Sustainability Guidelines*—a comprehensive program aimed to enable biochar practitioners to measure the sustainability impact of their operations via an online self-assessment tool that promotes continuous improvement and will allow practioners to benchmark their impacts against industry peers.

IBI and its members believe that biochar used as a soil amendment holds great potential to increase agricultural productivity and mitigate global climate change. Biochar operations are quite variable and involve a multitude of operators engaged in producing, distributing, and utilizing biochar in various contexts and scales, and under diverse and wide-ranging conditions. The inherent complexities of biochar systems thus require careful guidance and adequate monitoring to avoid adverse impacts to human and natural communities. Soil and water resources, climate stability, and biodiversity can benefit through proper implementation of biochar systems. Likewise, local communities benefit through enhanced food security, labor rights, and community and economic development opportunities. High-level guidance on these issues and others is encapsulated in the principles. We anticipate that as new information is made available the principles will be updated over time to reflect the rapidly evolving landscape of biochar systems, and we welcome your continued input and suggestions as we continue to monitor and update this guidance.

For updates on this initiative please visit our website and feel free to submit comments to us at SustainableBiochar@gmail.com.

IBI Biochar Certification Program Announcements

Biochar manufacturers eager to get a start on the soon to be released *IBI Biochar Certification Program* should begin by reviewing the testing requirements specified in the International Biochar Initiative (IBI) *Standardized Product Definition and Product Testing Guidelines for Biochar That Is Used in Soil* (published in May, 2012). Submitting required test results that meet these guidelines is a mandatory requirement for certification approval. Biochar manufacturers can utilize any professionally accredited laboratory for testing, but the chosen lab(s) must follow the test methods and reporting of results as specified in the *IBI Biochar Standards*. No alternative methods will be accepted.

As part of the first phase of implementation, manufacturers who have already completed testing of their biochar will be allowed to submit test results and documentation dated as far back as the approval of the *IBI Biochar Standards* (i.e. on or after May 9, 2012).

Documentation of the biochar chain-of-custody is another key program requirement. IBI will provide biochar manufacturers with a tool that to help document original feedstock(s) sources and the chain of custody of all entities that handle the feedstock until it is transformed into biochar. Chain of custody and biochar traceability provide necessary assurances that adequate care and transparency has been exercised to enable trace-back of final biochar from feedstock providers to biochar manufacturers across the biochar supply chain to end-users.

Before launching the *IBI Biochar Certification Program*, IBI will offer informational webinars to explain all program requirements and processes and to demonstrate the program's online tools and to review the enrollment process.

For questions or further inquiries regarding the *IBI Biochar Certification Program*, please contact us at certification@biochar-international.org.

Biochar Briefs: News Roundup for December

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

Amazon Region/Brazil
A team of scientists is looking at whether light reflected by the Amazon rainforest's vegetation could help an orbiting satellite find the fertile patches of soil known as terra preta that mark archaeological sites where pre-Colombian populations settled.

Australia
Northern Rivers Landcare and Richmond Landcare are producing a series of videos featuring farmers and researchers involved in biochar field trials in North Coast Australia and are hoping to get a portion of the Federal Government's $64 million Carbon Farming Futures Extension and Outreach Program to continue the biochar field trials.

Canada
Student researchers in Canada are using biochar in trials to study its effect on restoring forest growth on old mine sites with zinc contaminated soils.

Nicaragua
Researchers from Iowa State University (ISU)-based Biorenewables Research Laboratory are working in collaboration with Emerging Opportunities for Sustainability International, a nonprofit organization founded by a group of ISU alumni, to design and build a pyrolysis reactor that can produce biochar efficiently and at low cost for rural Nicaraguan communities.

United States

The Earth Partners (TEP), an alliance of professionals working in finance, project development, ecosystem restoration and land management, have developed a soil carbon quantification methodology (recently approved for use under the Verified Carbon Standard, VCS) to support more sustainable methods of agriculture and other land use and is now looking at a biochar module for that methodology.

A team from the University of Washington is testing a recent invention—a heat-resistant laminate "blanket" that wraps around a burning slash pile like a kiln to produce biochar in forested or field areas.

Iowa State University researchers have received a grant from the Leopold Center for Sustainable Agriculture to research the effects of biochar on a restored native prairie plant species in Western Iowa, specifically looking at ecosystem impacts of biochar on native plants and biodiversity.

Updated Information on IBI's Open Source Technology Webpage

In order to help spread more information about biochar technology, some members of the community have provided open source access to their unit designs and operating instructions. IBI is cataloging that information on our website to provide open access and has recently added a couple new publications including: Commissioning an Open Source Twin Trough Pyrolyzer (by Professor GX Pan, Dr Q Ding, Professor S Joseph, Professor LQ Li and Professor F C Christo) as well as publications by Dr. Hugh McLaughlin including Making Biochar for Research Purposes, Constructing a Biochar Stove, and Constructing a Larger Biochar Oven.

Opportunities in Biochar

- Receive a free subscription to Biomass Magazine. For more information: http://www.biochar-international.org/node/3797.
- Submit an abstract for a special session on biochar, entitled "Biochar: Waste to Wealth", held 5 - 8 May, 2013 at the Hong Kong Convention and Exhibition Centre (HKCEC). Abstracts are due December 31, 2012. For more information: http://www.biochar-international.org/node/3823.
- 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: http://www.biochar-international.org/node/3690.
- New job postings at: http://www.biochar-international.org/network/jobs.

Upcoming Calendar Events

- January 17 – 18, 2013: 1st Mediterranean Biochar Symposium, Biochar: past, present and future. Location: Italy. For more information: http://www.biochar-international.org/node/3581.
- February 7 – 8, 2013: 31st International Activated Carbon Conference. Location: Honolulu HI, USA. For more information: http://www.biochar-international.org/node/3787.
- February 14 – 15, 2013: 2nd Nordic Biochar Seminar. Location: Helsinki, Finland. For more information: http://www.biochar-international.org/node/3447.
- February 14 – 18, 2013: 2013 AAAS Annual Meeting. Location: Boston, MA, USA. For more information: http://www.biochar-international.org/node/3779.
- April 8 – 10, 2013: International Biomass Conference and Expo. Location: Minneapolis, MN, USA. For more information: http://www.biochar-international.org/node/3685.
- May 13 – 14, 2013: WATER, FORESTS, AND PEOPLE: Innovations for a Sustainable Water Future. Location: Beijing, China. For more information: http://www.biochar-international.org/node/3803.

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

Regional Biochar Group Updates

To read more on the 47 regional and national biochar groups, please see IBI's website (link to: http://www.biochar-international.org/network/communities). This month includes a new group in Myanmar and updates from the Israel Biochar Researchers Network, the Pioneer Valley Biochar Initiative (United States), SeaChar (United States), and the Pacific Northwest Biochar Working Group (United States).

UBI Myanmar

UB International (UBI) is a new program dedicated to testing the concept that thinly distributed feedstock can be utilized to significantly contribute to timely global climate change mitigation through low tech biochar production in sustainable rural development amongst small scale farmers, herders and forestry workers.

UBI Myanmar (UBI My) will test the UBI concept under the diverse ecological and social environment types present in Myanmar. A number of entities, including the Myanmar Baptist Convention (MBC), ECHO Asia Impact Center, Upland Holistic Development Project (UHDP), and UB International (UBI) have joined together in an informal consortium as UBI Myanmar and will begin testing and adapting biochar's potential to aid in sustainable rural development in the particular culture/environment types in Myanmar in consultation with local community members as part of their programs. Some of the entities have already begun aspects of this work and UBI Myanmar welcomes all other people and entities that would join in these efforts or begin programs of their own. For more information please see: http://www.biochar-international.org/regional/UBI_Myanmar.

Photo: Building an oven lid; courtesy of Boonsong Thansrithong

Israel Biochar Researchers Network

Members of the Israel Biochar Researchers Network (iBRN) had a lot of good news this month. The Office of the Chief Scientist of the Ministry of Agriculture and Rural Development awarded three new grants to begin at the start of 2013 involving different aspects of biochar:

1. Impact of biochar on soil-borne diseases (O. Frenkel, Y. Elad, E.R. Graber)
2. Biochar for reducing ammonia emissions from poultry houses (B. Lew, S. Druayn, Graber, E.R.)
3. Composting with biochar for reducing N losses and air pollution, and improving compost quality (E.R. Graber, M. Raviv, Y. Laor)

In addition, they obtained support to build a pyrolysis unit capable of producing 100 kg biochar per day. For more information, please see: https://sites.google.com/site/ibrnisraelbiocharnetwork.

The Pioneer Valley Biochar Initiative, PVBI (United States)

Planning for the October 13 – 16, *2013 North American Biochar Symposium, Harvesting Hope: The Science & Synergies of Biochar*, is well underway. The event will take place at the University of Massachusetts, Amherst. An official call for papers will be announced mid-January and the four featured tracks have been defined as: Biochar Benefits; Feedstocks and Technology; Scale Sales and Marketing; and Community Engagement/Policy. Sponsorship outreach calls have begun and have received great interest. There are many sponsorship levels which offer sponsors a package to suit their needs. For more overall conference information and specific sponsor packages, please see: http://pvbiochar.org/2013-symposium.

SeaChar (United States)

2012 has been an amazing year for SeaChar.Org on both the local and international fronts. The Estufa Finca-Talamanca Project in Costa Rica has built and distributed a total of 146 biochar producing stoves since they began stove promotion and training in January of 2012. 110 stoves have been sold to families participating in the Estufa Finca-Talamanca program, 25 stoves were sold retail to the local Costa Rica market, 3 stoves have been placed for use at community centers (including one in Panama), 2 replacement stoves have been provided, and another 6 are being used by Estufa Finca staff/employees for training and demonstration purposes. The organization has a waiting list for both participation in the Estufa Finca Project and to purchase a stove.

SeaChar employs two local indigenous Bribri women to handle stove promotion, training and follow-up with their communities, as well as Laura Roldan a talented, young Costa Rican, as their Field Coordinator. SeaChar's innovative community based training program was designed and initiated by former SeaChar Board member Kate Selting, and includes illustrated training materials drawn by Seattle artist Sara Porter. To read the

remainder of this update, please see: http://www.biochar-international.org/regional/seattle.

Photo: Spreading biochar around cacao trees in Costa Rica; courtesy of SeaChar.

Pacific Northwest Biochar Working Group (United States)
On November 20, a Building Northwest Biochar Markets workshop brought together 60 of the region's most important biochar producers, purchasers, researchers, engineers, and potential regulators to chart the path to growing biochar supply and demand. The meeting resulted in the creation of the Pacific Northwest Biochar Working group, and identified a set of priority projects to help make biochar a useful tool for local economic development, storm water filtration, ecosystem remediation, agriculture, and horticulture. For more information, please see:
http://climatesolutions.org/cs-journal/building-northwest-biochar-markets.

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 searchable 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.

- Adams, Melinda; Tamara Benjamin; Nancy Emery; Sylvie Brouder; and Kevin D. Gibson (2012). The Effect of Biochar on Native and Invasive Prairie Plant Species. Invasive Plant Science and Management.
- Anvesh, Reddy (2012). Phosphorus Transport and Distribution in Kentucky Soils Prepared Using Various Biochar Types. Theses & Specialist Projects. Paper 1210; http://digitalcommons.wku.edu/theses/1210.
- Brendová, Katerina; Pavel Tlustos; Jirina Száková; Jan Habart (2012). Biochar Properties from Different Materials of Plant Origin. Eur. Chem. Bull. 1(12), 535-539.
- Brown, Sean; Andrew Krek; Brent Lees (2012). Growth of creeping bentgrass (Agrostis palustris) in a sand-based root zone amended with a nutrient loaded biochar. Prepared for the Prairie Turfgrass Research Centre; http://ptrc.oldscollege.ca/documents/StudentProjectonBiochar.pdf.
- Inthapanya, Sangkhom; T R Preston; and R A Leng (2012). Biochar increases biogas production in a batch digester charged with cattle manure. Livestock Research for Rural Development 24 (12); http://lrrd.cipav.org.co/lrrd24/12/sang24212.htm.
- Lee, Yongwoon; Pu-Reun-Byul Eum; Changkook Ryu; Young-Kwon Park; Jin-Ho Jung; Seunghun Hyun (2012). Characteristics of Biochar Produced from Slow Pyrolysis of Geodae-Uksae 1. Bioresource Technology.
- Leng, R A; Sangkhom Inthapanya; and T R Preston (2012). Methane production is reduced in an in vitro incubation when the rumen fluid is taken from cattle that previously received biochar in their diet. Livestock Research for Rural Development 24 (11); http://lrrd.cipav.org.co/lrrd24/11/sang24211.htm.
- Masek, Ondrej; Vitaly Budarin; Mark Gronnow; Kyle Crombie; Peter Brownsort; Emma Fitzpatrick; Peter Hurst (2012). Microwave and Slow Pyrolysis Biochar—Comparison of Physical and Functional Properties. Journal of Analytical and Applied Pyrolysis.
- Nzanza, B., D. Marais and P. Soundy (2012). Effect of Arbuscular Mycorrhizal Fungal Inoculation and Biochar Amendment on Growth and Yield of Tomato. INTERNATIONAL JOURNAL OF AGRICULTURE & BIOLOGY; http://www.fspublishers.org/ijab/past-issues/IJABVOL_14_NO_6/17.pdf.
- Oh, Seok-Young; Jong-Gil Son; Pei C. Chiu (2012). Biochar-mediated reductive transformation of nitro herbicides and explosives. Environmental Toxicology and Chemistry.
- Parvage, Mohammed Masud; Barbro Ulén; Jan Eriksson; Jeffery Strock; Holger Kirchmann (2012). Phosphorus availability in soils amended with wheat residue char. Biology and Fertility of Soils.
- Peterson, Steven C.; Michael Appell; Michael A. Jackson; Akwasi A. Boateng (2013). Comparing Corn Stover and Switchgrass Biochar: Characterization and Sorption Properties. Journal of Agricultural Science; Vol. 5, No. 1.
- Prost, Katharina; Nils Borchard; Jan Siemens; Timo Kautz; Jean-Marie Séquaris; Andreas Möller and Wulf Amelung (2012). Biochar Affected by Composting with Farmyard Manure. Journal of Environmental Quality.
- Schouten, Socrates; Jan W. van Groenigen; Oene Oenema; Maria L. Cayuela (2012). Bioenergy

from cattle manure? Implications of anaerobic digestion and subsequent pyrolysis for carbon and nitrogen dynamics in soil. GCB Bioenergy. Volume 4, Issue 6, pages 751–760.

- Smith, Cameron R.; Eric M. Buzan; and James W. Lee (2012). Potential Impact of Biochar Water-Extractable Substances on Environmental Sustainability. Sustainable Chemistry and Engineering; http://pubs.acs.org/doi/full/10.1021/sc300063f.
- Subedi, Raghunath (2012). Effects of Biochar on Soil Phosphorus and Interaction with Phosphate Solubilizing Bacteria. Master's Thesis; http://lib.ugent.be/fulltxt/RUG01/001/894/528/RUG01-001894528_2012_0001_AC.pdf.
- Yang, Haiqing and Kuichuan Sheng (2012). Characterization of Biochar Properties Affected by Different Pyrolysis Temperatures Using Visible-Near-Infrared Spectroscopy. ISRN Spectroscopy; http://www.hindawi.com/isrn/spectroscopy/2012/712837/.
- Yang, Yage; Jin Long Yan; Cheng Ding (2012). Effects of Biochar Amendment on the Dynamics of Enzyme Activities from a Paddy Soil Polluted by Heavy Metals. Journal Advanced Materials Research (Volumes 610 - 613) Volume Progress in Environmental Science and Engineering. Pages 2129-2133.
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- Zhang, Ming; Bin Gao; Sima Varnoosfaderon; Arthur Hebard; Ying Yao; Mandu Inyang (2012). Preparation and characterization of a novel magnetic biochar for arsenic removal. Bioresource Technology.