Highlights from this Month’s News

In this month’s edition, look for news, ideas and trends like these:

- Maker of air curtain carbonizers joins IBI
- Biochar gets a seat at the table
- Helping trees and forests
- Stimulating coffee and tea growth
- Winning with water purification

Welcome to Our New Corporate Members ...

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

NEW BUSINESS MEMBER: ROI

We are a manufacturing company designed to address the varied and growing needs and opportunities of the material processing industries. Given the design and engineering capabilities of the Company’s leadership and engineering staff, ROI has developed a robust, technology-enabled product line with appeal across multiple industry sectors. Positioned to be both a domestic provider and global exporter, ROI’s objective is to serve as a leading supplier of processing equipment that meets specific customer needs.

Clean Air Combust, LLC, a wholly owned subsidiary of ROI, offers lease and contracted services to customers in need of reducing their biomass and/or unwanted materials, utilizing ROI’s EnviroSaver and CARBONATOR product line. Whether the need is to convert clean wood and vegetative debris into biochar for re-sale, or to eliminate your wood and vegetative waste or MSW (municipal solid waste), where applicable, Clean Air Combust is equipped to provide our systems and supporting equipment to operate on a mobile or stationary basis. Our website is https://roi-equipment.com/.

The Big Picture

The IPCC’s gap report on our ability to reduce greenhouse gas emissions enough to stay within the limits of the Paris agreement includes biochar as one measure that contributes to drawing down atmospheric carbon. An article in The Biochar Journal by Hans-Peter Schmidt describes how using terms
familiar to IPCC participants helped biochar to receive recognition. The article supports three types of pyrogenic carbon capture and storage (PyCCS), including biochar as “a complementary way forward to extend the MRT of biogenic C in the terrestrial system and to increase C-efficiencies.” The page also contains links to the four open access papers cited by the IPCC. Carbon sequestration won the attention of investors due to more recognition in the IPCC report.

Biomass monoculture plantations have been shown to be only half as capable as mixed tree plantings for storing carbon. Species-rich forests are also less vulnerable to diseases or extreme weather events, based on an eight-year study in China. Regardless, forests provide many more critical ecosystem services than growing feedstock. Pristine forests and recovering secondary forests are mostly good candidates for conservation and rewinding, though charring locally the dead or diseased trees of infested forests can help restore and protect forest health. The climatic zone of a forest will also affect the trade-offs in sustainable forest management because of, for example, differing carbon cycle dynamics. Other factors can be modeled to show whether the carbon stored by adopting various forestry strategies would significantly improve global climate.

News of the Initiative

Biochar Initiative Representation at COP24

IBI is very excited to announce that we have been invited to send three delegates to attend the upcoming United Nations Framework Convention on Climate Change Conference of the Parties (informally known as COP24) event in Katowice, Poland. To our knowledge this is the first time any organization predominantly focused on biochar will be represented at a COP.

COP24 is a two-week event (December 3 – 14) which brings together many thousands of people from across the globe to discuss solutions to mitigate and adapt to climate change. This year’s conference will focus on three key themes:

- Technology – development of climate-friendly modern solutions,
- Man – solidarity and just transition of industrial regions;
- Nature – achieving climate neutrality by absorbing CO2 by forests and land, or by water management.

Our plan is to send 2 groups of 3 delegates for one week apiece. To do this effectively, we need your help. Funding to cover traveling expenses for certain delegates is urgently needed. Please consider supporting IBI’s attendance at this important event. This announcement on the IBI website includes a specific donation button for this request. Thank-you in advance for your generosity! As a reminder, your donation is tax deductible to the fullest extent allowable.

Coffee White Paper Update

Thanks to financial support provided by the Biochar for Sustainable Soils Project, the white paper, The Potential for Biochar to Improve Sustainability in Coffee Cultivation and Processing, has been updated and is now freely available to all interested parties.
Adding to dozen or so projects examined in the original 2015 white paper, this update includes new biochar projects in Brazil, China, Colombia, Ethiopia, Peru, Tanzania, Uganda and Vietnam are highlighted in the updated report. Project coordinators identified various drivers and benefits for the coffee and biochar trials including:

- improved soil fertility through increased pH and water/nutrient management;
- improved soil resilience against drought, heavy rain and pests;
- reduced dependence on fertilizers and other inputs;
- improved transplant survival rates for young coffee plants;
- ability to convert coffee residues into renewable energy and/or effective soil amendment; and
- improved composting functions when applied to coffee pulp compost.

In addition to project highlights, updates from peer reviewed research on the benefits of using biochar in coffee cultivation and processing are discussed. New information on how biochar can mitigate coffee rust (roya) and other diseases is presented in addition to benefits related to soil fertility, composting, filtration of effluents from coffee production, renewable energy production, residue management and reduction of greenhouse gas emissions across the entire coffee supply chain. A webinar on this topic is in the works. Stay tuned for more information!

**Next up:** An IBI white paper titled, “The Promising Benefits and Greater Potential of Biochar to enhance Maize (corn) Production, Cultivation, and Processing Systems”.

If your organization would like to sponsor the development of summaries for other biochar specific topics (either in-depth white papers or high-level fact sheet summaries) please contact IBI at info@biochar-international.org.

**Regional Briefs**

**Europe**

Nationale Bomenbank BV has launched an enriched biochar-based tree soil product at the urban tree trade show, Vakbeurs Openbare Ruimte. Lifechar Boomgarantzand (a registered trademark in case you were thinking of using that label) incorporates enriched biochar from Carbon Gold. For several years, Carbon Gold has been showing how biochar helps trees. To reinforce their trial results, they have also assembled summaries of several outside studies describing methods and results of amending tree soils with biochar.

**Southern Asia**

Nepalese journalist Abhaya Raj Joshi recently visited a village where more than 50,000 trees were planted in forest gardens with organic, biochar-based fertilization. He interviewed villagers and supplies perspective on how the new climate farming methods have changed their lives and the village.

**Our last report** on Dilmah Conservation in Sri Lanka was updated in 2012. Since then, the application of biochar on the tea plantations has continued on a large scale. Local biochar maker
Gopathi Balachandra reports that to expand its trials, Dilmah is seeking more than 20 tons of biochar per month from suppliers.

North America

On October 10th we lost a pioneer of clean energy, Dr. Thomas B. Reed, who many in the biochar community recognize for his development of the Top Lit Updraft Gasifier (TLUD) stove. To appreciate the arc of his career and thought life, a website dedicated to his inventions and work has been maintained over the past 5 years. The most recent post is an obituary with an invitation to the memorial service on November 4th.

Humboldt State University and 15 regional partners completed the four-year Waste to Wisdom Project, researching the conversion of forest residues into bioenergy and other valuable bio-based products. The reports of their research are open-access. The 79-page Final Project Report provides a full summary of the project. There is also a collection of numerous previously published reports associated with the various project sub-tasks, the majority of which are relevant to biochar.

Wakefield Biochar has a timely blog post, supported by scientific research, about reducing salt-damage to lawns over the winter.

The $1.5 million Water Abundance XPrize competition begun three years ago has a winner: the Skysource/Skywater Alliance whose containerized unit uses a gasifier to heat and humidify the air from which water vapor is condensed, while also making biochar. The team will use the winnings to rapidly develop units, called WEDEWs (“wood-to-energy deployed water”), for NGO’s whose mission includes clean water and disaster relief.

An even bigger purse may await the University of Idaho’s Clean Water Machine Team who have made it into the final four in competition for the $10 million George Barley clean water prize. According to Eric Eikenberg, CEO of The Everglades Foundation, which is hosting the competition, “These finalists represent our best hope for solving the algae crisis that is choking waterways worldwide.” Idaho’s design uses biochar as one medium in the removal of phosphorus from water.

Retaining phosphorus in soils helps keep it out of waterways. In Vermont, another biochar innovation won Green Mountain Biochar a $30 K grant from the state.

As we briefly reported earlier this year, Cornell University has a new state-of-the-art pyrolysis facility for interdisciplinary research on pyrolysis-biochar-bioenergy systems. Cornell’s team is eagerly seeking to host outside projects who wish to employ their kiln’s advanced capabilities. The facility features a continuous feed, electric fired, slow pyrolysis kiln capable of accepting feedstock with as high as 45% ash content. Flexibility in both heating rate and residence time is supported by five independently controlled heating zones and adjustable feed rate, char bed inclination and agitation. The kiln is instrumented to datalog production conditions as well as syngas composition (CO, CO₂, H₂, CH₄, O₂). If you would like to understand how to optimize production parameters to create designer biochars from different types of biomass contact pyrolysis@cornell.edu to enquire with Akio Enders or Joshua Stone about collaboration opportunities.
Sally Brown, an eminent commentator for Bio-cycle Magazine, has published an update of her views on biochar. Her latest take on the benefits of biochar to soil health warns against considering biochar a panacea. Some excerpts from the article:

“Bring the char, but also bring the no till, compost, cover crops, limestone and a range of other options to restore function and health to your soils. ...”

“... specific biochars are likely very good for specific things under specific circumstances. Some examples might be binding metals on contaminated sites or reducing nitrous oxide emissions from corn growing on fine soils. They might also be important for reducing odors during composting. Finding the char that is right for you will likely be the next focus of scientific studies. A critical part of this will be defining the char equivalent of the US Composting Council’s Seal of Testing Assurance (STA).”

One way to appreciate the exquisiteness of biochar is by getting a taste of it. Pyrolysis, rather than incineration, could spell the difference between a tasty char and a dinner disaster. As with feeding the soil, there are many ways that Dr. Mercola says the body could benefit from charcoal.

Dr. Mercola’s prescription for charcoal is not limited to human consumption. He also shows great interest in its benefits to soil health and is promoting the captivating documentary, “Dirt Rich” which screened at Biochar 2018.

The National Academies of Sciences has produced Negative Emissions Technologies and Reliable Sequestration, A Research Agenda, recommending that $3 – 5M be budgeted annually by AFRI - USDA for 3-5 projects per year to assess biochar amendment impacts for different management systems and soil types.

The Bioenergy Alliance Network of the Rockies (BANR), which recently completed a large research effort to provide science-based underpinning for sustainable biofuel & bio-products creation from beetle-killed and residual wood feedstocks will jointly conduct Biochar 2019 with USBI. See Calendar below for more info. We heard from BANR’s Dr. Nate Anderson in February’s webinar, “Forestry Management and Biochar,” which members can still access at no charge.

Australia and The Pacific

Mt. Difficulty Wines in Central Otago, New Zealand has spent $50,000 charring vine waste and amending vineyard soils with the char.

Biochar producers are rationalizing volume and pricing in Australia.
APBC 2018
The 4th Asia Pacific Biochar Conference.
November 4-8, 2018. Foshan City, Guangdong Province, China.
http://apbc2018.csp.escience.cn

American Geophysical Union.
https://fallmeeting.agu.org/2018/

Pflanzenkohle im kommunalen Kontext (Biochar in the Urban Context)
November 09 – 10, 2018, Koblenz, Germany. Interdisciplinary collaboration workshop for prospective and recent German university PhD’s will be on 8 Nov.
https://fachverbandpflanzenkohle.org/veranstaltung/doktorandentag-des-fachverbands-pflanzenkohle-e-v/

The 12th annual International Biomass Conference & Expo
March 18-20, 2019, Savannah, GA. The largest gathering of biomass professionals and academics in the world. Presentation ideas will be accepted through November 16, 2018.
http://www.biomassconference.com/

European Geosciences Union
7–12 April 2019, Vienna, Austria. Covering all disciplines of the Earth, planetary, and space sciences.
https://egu2019.eu/

Global Earth Repair Conference
May 3 – 5, 2019. Port Townsend, Washington. Biochar is among the over two dozen topics to be discussed.
https://earthrepair.friendsofthetrees.net/

USBI-BANR 2019 Conference
https://biochar-us.org
http://banr.nrel.colostate.edu/
Biochar-related jobs, scholarships, and opportunities

The research group of Environmental Biotechnology at the Center for Applied Geosciences at the University of Tübingen is looking for an excellent PhD candidate. The research in the Environmental Biotechnology Group is focused around the utilization of open, mixed, and pure microbial cultures in engineered systems, for example, for biotechnological production platforms. In addition, the group studies extracellular electron transfer in soils and sediments between microbes and redox-active compounds such as biochar and minerals.

3 FACTORY OPERATORS, XYLO CARBONE - Saint-Tite, Quebec, Canada. Requires High school diploma. AEC or DEP (asset) and 1 to 2 years of factory experience.

Junior Researcher: Microbiology, CEITEC Brno University of Technology, Czech Republic. Requires a Ph.D. degree in a relevant field and good knowledge of biological activation of biochar. Electronic applications should be submitted by November 5th, 2018.

New Research

Here are a few of the papers recently published regarding biochar. These are selected by IBI staff from the over 140 journal articles included in the latest monthly list (with links and cogent quotes from abstracts) available on your IBI Member page. Not an IBI member? Access to exclusive biochar research lists is just one more reason to join IBI and keep up with all the exciting developments!

- Preventing faults in asphalt:

  From the Abstract: "... the bio-char modified asphalts had better high-temperature rutting resistance and anti-aging properties than the graphite modified asphalt, especially for the binders with the smaller-sized and higher content of bio-char particles. Furthermore, the asphalt binder modified by the bio-char with sizes less than 75 μm and about 4% content could also achieve a better low-temperature crack resistance, in comparison to other modified asphalt binders."

- Lightening the load for dairies:

  From the Abstract: “The process could transform the biomass waste to high-value-added biochar products in high efficiency as well as reduce the manure biological pollution to the environment. ... The biochar with tunable physicochemical properties that was produced under different temperatures may be used for soil amendment or other fields.”

- Biochar catching on in Bucharest:
**From the Abstract:** “The biochar resulting from pyrolysis and gasification processes is a valuable amendment to agricultural soils and an efficient and economical way to seize carbon.”

- **Big opportunity with wastewater treatment:**

  **From the Abstract:** “Biochar-sludge amended SWIS with intermittent aeration obtained ... lower N2O emission rates ...under high influent [organic surface loading rates (OSLRs)] ...compared with non-aerated SWISs with/without biochar-sludge. Furthermore, the abundances of ... genes involved in nitrogen removal were enhanced under high influent OSLR in biochar-sludge amended SWIS with intermittent aeration.”

- **We can’t stop talking about coffee:**

  **From the Abstract:** “A multi-year study was conducted to test effects of locally produced biochar derived from coffee wastes, e.g., pulp and husks, on carbon stocks of: i) coffee trees, and, ii) soil organic carbon (SOC) in selected coffee growing pockets.”

International Biochar Initiative  [www.biochar-international.org](http://www.biochar-international.org)  [info@biochar-international.org](mailto:info@biochar-international.org)

Follow us on [Twitter](#) & Like us on [Facebook](#)