Highlights from this Month’s News

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

❖ We gratefully welcome several new and renewing corporate members
❖ COP24 takeaways
❖ California gives biochar a boost
❖ A new journal just for biochar

Welcome to Our New Corporate Members ...

KOREA UNIVERSITY
SUSTAINING MEMBER
• Seoul, Seongbuk-gu, REPUBLIC OF KOREA

AMERICAN BIOCHAR COMPANY
BUSINESS
• Niles, MI, US
  www.ambiochar.com
Manufacturer and Distributor of Biochar and Biochar blends

CITY LIGHT CAPITAL
BUSINESS
• Grand Rapids, MI, US
  www.citylightcap.com
Venture Capital firm

CUMMINS, INC.
BUSINESS
• Minneapolis, MN, US
  https://www.cummins.com/
Engine and Power Systems Manufacturer
NKG TROPICAL FARM MANAGEMENT GMBH

BUSINESS
Zug, Switzerland
www.nkgtropical.com
Coffee Plantations

NORTHERN CALAMIAN FARMING INC.

BUSINESS
- Palawan, Coron, Philippines
  Farm

TWO DOT WIND LLC

BUSINESS
- Evanston, IL, US
  Renewable Energy Development

APPALACHIAN STATE UNIVERSITY

ORGANIZATION
- Boone, NC, US
  http://ok.tec.appstate.edu/biomass/
  https://stbe.appstate.edu/
Department of Sustainable Technology & the Built Environment

AUSTRALIA NEW ZEALAND BIOCHAR INITIATIVE INC. (ANZBI)

ORGANIZATION
- Tyagarah, NSW, Australia
  https://www.anzbi.org
The Australian and New Zealand Biochar Initiative Inc. is a collaborative group of scientists, engineers, growers and other stakeholders interested in advancing the understanding and application of biochar materials and getting viable biochar projects in the ground. Collectively our aim is to collaborate on research programs, promote and advocate the adoption of biochar investigation and use, and communicate the opportunities presented by biochar to policy makers, land managers, the public, industry and fellow scientists. We offer members a discount to the annual biochar conference and a full set of recordings thereafter, deliver an ongoing webinar series, offer discounts to books and access to the full membership via a members directory on this website.

HUSK VENTURES SL

ORGANIZATION
- Barcelona, Spain
  www.huskventures.com
We are a social enterprise with a mission to improve smallholders livelihoods by converting rice husk into biochar to build soil fertility, improve yields and sink carbon.
NPO KITAKYU CLEAN ENVIRONMENT (PROVISIONAL TRANSLATION)

ORGANIZATION
- Kitakyushu, Japan
  [http://www.kitakan.org](http://www.kitakan.org)
Registered Nonprofit Organization

... and Especially to Our Renewing Corporate Members!

CORNELL UNIVERSITY

SUSTAINING MEMBER
- Ithaca, NY, US
  [https://scs.cals.cornell.edu/people/johannes-lehmann/](https://scs.cals.cornell.edu/people/johannes-lehmann/)
Academic Research and Teaching

STANDARD BIO AS

SUSTAINING MEMBER
- Bø i Telemark, Norway
Technology company

CARBON GOLD LTD

BUSINESS
- Bristol, Great Britain

T R MILES TECHNICAL CONSULTANTS INC.

BUSINESS
- Portland, OR, US
  [http://www.biochar.bioenergylists.org](http://www.biochar.bioenergylists.org)
Biomass energy engineering consultant

NO FOSSIL FUEL, LLC / CLEAN POWER, INC.

BUSINESS
- Kingston, MA, US
  [http://www.nofossilfuel.com](http://www.nofossilfuel.com)

AMERICA SEQUESTERS CO2, LLC

BUSINESS
- Clarence Center, NY, US
  [http://biocharlie.com](http://biocharlie.com)
YREA is an environmental charity that has researched biochar for urban trees and agriculture in Ontario with plans to further research its uses and establish a biochar social enterprise.

News of the Initiative

COP24 Katowice, Poland  3 - 14 December

The IBI delegation found the conference to be the most widely attended forum anywhere. As an organization open to working with anyone to support the growth of biochar markets, there is no better opportunity for us than the Conference of the Parties (COP) to make new connections. Numerous visitors from various countries came to the IBI booth and were educated about biochar by our group of experts: IBI Directors Kathleen Draper, Johannes Lehmann from Cornell University, David Wayne, and Genxing Pan from Nanjing University; as well as IBI members Nikolas Hagemann from the German Biochar Association and Ruy Anaya de la Rosa of the Biochar for Sustainable Soils Project. Getting all these experts to the COP on short notice left little time for coming up with a game plan. Nonetheless, they did a great job of networking and connecting new people to IBI. Looking at IBI’s work at COP24 in context, Kathleen wrote a blog post in which she shares her impressions from the week she attended. Dr. Lehmann said that, unlike ten years ago, biochar is now clearly “on the map” as one of the major pathways to carbon sequestration and that it will be included in the methodology to be published in the next IPCC report. He views this as significant progress for biochar. The IBI delegation plans to take an active approach to highlighting how biochar can help with climate change mitigation and adaptation at COP25, which will be held in Chile.

One of the ways an organization can stand out at a COP is to participate in or host a side event that includes speakers and the opportunity for questions and answers. For example, an event was hosted by the 4 pour 1000 initiative (IBI joined just last month) at which Dr. Lehmann displayed a poster on biochar. 4p1000 is an organization that garnered widespread attention at COP21 (Paris) and remains a strong voice for soil carbon sequestration. Their current thrust is developing protocols to assess SOC changes and maintaining a registry of research projects. They also try to engage industry and governments. While biochar has not been an overt part of their agenda, 4p1000 Chief Scientist, Cornelia Rumpel, is very interested in further incorporating it into their solution set. She was the lead author of an article just published in Nature: Put more carbon in soils to meet Paris climate pledges. The organization’s Executive Secretary, Dr. Paul Luu, also has a paper coming out in March in Nature Sustainability, co-authored by Dr. Lehmann, on soil carbon investments.

The Big Picture
In their soon-to-be-released book, *Burn: Using Fire to Cool the Earth*, Albert Bates and Kathleen Draper make a strong case that biochar’s future lies mostly above ground in a wide array of uses still to be fully explored. Carbon180 published a [report](#) that looks at ways of using captured CO2 and other forms of waste carbon (including biomass) in the manufacture of a diverse number of commodities. The name they give to this $5 Trillion/year market is “Carbontech”. Lest the CO2 capture industry expect to take the whole pie, biochar advocates are already formulating a “Biochar Displacement Strategy”. As oil and gas extraction winds down, valorizing biomass looks like it will be essential to help fill the carbon gap while also drawing down greenhouse gasses. The Ithaka Institute’s [latest article](#) on the suite of prospective Negative Emissions Technologies (NETs) urges policymakers and mainstream media to recognize that biochar deserves much more support than it has received.

**Regional Briefs**

**North America**

Researchers at Iowa State University are intensifying a technology they call [autothermal pyrolysis](#), resulting in a 500% increase in biomass feed rate while producing biochar and other co-products more efficiently. Development is being accelerated by the Department of Energy-funded RAPID Institute, a Manufacturing USA initiative.

[American Farmland Trust (AFT)](#) the organization behind the national movement No Farms No Food®, has hired Jennifer Moore-Kucera as the director of its new climate initiative. Dr. Kucera was a keynote speaker at USBI 2016 in Corvallis, Oregon when she was still the West Regional Soil Health Team Leader for the Natural Resource Conservation Service. As part of their effort to keep farming in the U.S. viable, AFT pioneers adoption of cutting-edge techniques that save farmland and protect the environment. Nori interviewed the [Senior Program Officer of AFT](#) for a [recent podcast](#).

One of USBI’s reasons for holding their annual conference this year in Delaware was that the Chesapeake Bay area requires extraordinary efforts to improve stormwater management, an area in which biochar offers great promise, as reported in [the Bay Journal](#). USBI is pleased that the conference spurred some press exposure needed to bring biochar to attention of the many people in this environmentally sensitive region.

The Canadian government supported the [commissioning](#) of a [new plant](#) to make biochar for the purpose of removing hydrogen sulfide from renewable natural gas sources such as anaerobic digesters, landfills, and wastewater treatment plants.

California’s Strategic Growth Council’s Climate Change Research Program, which is funded by cap-and-trade auction proceeds, has awarded a [second round of project funding](#). A total of $7.6 million goes to the University of California (UC) Office of the President for a Working Lands Innovation Center to Catalyze Negative Carbon Emissions and to UC Merced for its project: Mobile Biochar Production for Methane Emission Reduction and Soil Amendment. Research goals are to quantify greenhouse gas emission reductions in soil with biochar amendments, model nitrous oxide emissions from soils with biochar amendments, evaluate the economic viability of biochar practices and develop the framework for a carbon credit reporting protocol for soil and manure management applications using biochar.
A 25-page white paper by the Northwest Natural Resource Group is a crash course in making biochar from forest slash.

Asia

In the United Arab Emirates, American University of Sharjah’s College of Engineering has received AED 630,000 from Emirates Global Aluminium to explore how common organic waste can be converted into biochar.

*Biochar*, a new open-access journal from Springer Nature will make its debut in March.

IBI Chairman Tom Miles, shown here with Editorial Director, Wushuang Li (mailing address below), was involved in the launch. Published in English out of Shenyang Agricultural University, the journal is intended to be international with more than 58% of the 60+ members of the editorial board from countries outside China. Topics will include processing and preparation of biochar, biochar-based materials, soil and farming, remediation and conservation, global climate change, bioenergy and rural development.

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Biochar Industry Technology Innovation Strategic Alliance of China
Shenyang Agricultural University
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Europe

IBI’s Study Tour participants are not the only group interested in learning from Austria’s Kaindorf region about soil humus creation. Holland has signed an agreement to tap into the Styrians’ knowledge and to replicate those practices at home. Sonnenerde, led by Gerald Dunst, is working to make biochar a key element in the Kaindorf Eco-region’s humus-building practices.

Africa

Jimma and Injibara Universities in Ethiopia are working with Dr. Johannes Lehmann and his Cornell University team to test soil amendment blends containing charred bones. Ethiopia’s pastoralist
culture affords them plentiful leftover bones that can be turned into fertilizer, thus alleviating soil phosphorus deficiencies.

Australia and The Pacific

With expert guidance by Dr. Stephen Joseph, the Australia and New Zealand Biochar Initiative is developing a set of biochar standards for ANZ. As drafts are issued, the group will seek input from industry and then issue a final, prospectively in 2019.
2018-2019 International Soils Meeting
January 6-9, 2019 | San Diego, CA
More than fifty papers on biochar from around the world.
https://www.sacmeetings.org/home

The 12th annual International Biomass Conference & Expo
March 18-20, 2019, Savannah, GA.
The largest gathering of biomass professionals and academics in the world.
http://www.biomassconference.com/

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/

Bio-Char II: Production, Characterization and Applications
September 15-20, 2019 Cetraro (Calabria), Italy. Deadline for abstracts March 31, 2019.
http://www.engconf.org/conferences/energy-technology/bio-char-ii-production-characterization-and-applications/#header0

14th Global Summit and Expo on Biomass and Bioenergy
August 26-27, 2019 Vienna, Austria.
Theme: Effective utilization of biomass for sustainable development
https://biomass.expertconferences.org

Third ANZ Biochar Conference
October 20-26, 2019 Green Triangle Region & Melbourne Metro, Australia.
In conjunction with the first ANZBI Study Tour. Conference theme is “Mainstreaming Biochar.”
https://anzbc.org.au/
Biochar-related jobs, scholarships, and opportunities

**Environmental Engineer (PhD)** – CERENA (Centro de Recursos Naturais e Ambiente), Instituto Superior Técnico, Alameda Campus, Av. Rovisco Pais, 1, 1049-001 Lisbon, Portugal – development of a new methodology for the sustainable restoration/valorisation of abandoned mine sites in the SE of Portugal, based on the combined action of phytoremediation processes with bio-adsorbents derived from biomass residues (biochar), in a circular economy approach; as well as the establishment of a reliable process for the selection of plants through the characterization of biochemical markers under oxidative stress; Application deadline: 07 January 2019.

**Trainee project manager** (6-month internship) – GRECAT, Yncréa Hauts-de-France - Student in last year of bac +5, agricultural engineering school / MsC / specialized in agriculture.

**Internship (4 months)** - Nestlé R & D center, Tours, France, to be filled from March 2019. Experiments to test different composition of substrates (sand, biochar, absorbent polymer ...) to evaluate the impact of these on the vegetative growth of coffee seedlings and their response to water stress.

New Research

Here are just a few of the papers recently published regarding biochar. These are selected by IBI staff from the over 180 journal articles included in the latest monthly list available on your IBI Member homepage. The list contains highlights and cogent quotes from abstracts to make it easy for you to find articles of interest. You will also automatically receive the research paper list by e-mail every month - just one more reason to join IBI and keep up with all the exciting developments!

- **A Little Nickel Can Go a Long Way:**
  
  **From the Abstract:** “… we used different-nickel (Ni)-level biochars produced by the pyrolysis of plant biomass with correspondingly different Ni levels as extracellular electron shuttles for microbial reduction of ferrhydrite by *Shewanella oneidensis* MR-1. A high Ni level of the precursor considerably enhanced the conductor mechanism of the produced biochar and thus enabled the biochar to catalyze increased microbial reductions of the Fe(III) mineral …”

- **Problems as Opportunities:**
  
  **From the Abstract:** “Problem soils are referred to as those with poor physical, chemical, and biological properties that inhibit or prevent plant growth. … The world has lost a third of its arable land due to erosion and pollution in the past 40 years. … Information gathered from this review suggests that biochar amendment is a viable way of improving the quality of problem soils and enhancing crop production.”
**The Strong, Silent Type (of Concrete):**

**Highlights:** “The addition of biochar at 15% by weight decreased the concrete density to 1454 kg/m³. Biochar improved the sound absorption coefficient of concrete across the range of 200–2000 Hz. The biochar decreases the temperature dependent thermal conductivity of the concrete, to a lowest value of 0.192 W/(m·K). Biochar addition at lower concentrations showed no detrimental effects to the compressive strengths of the concrete.”

**Disappear Chlorpyrifos:**

From the Abstract: “... biochar-amended soil showed significantly higher sorption capacities (Kf, 28.68 and 218.83 mg kg⁻¹) for CP compared to compost-amended soils (15.95 and 111.85 mg kg⁻¹) at 0.25 and 0.50%, respectively.”

**Some Like it Hot:**

From the Abstract: “As a result of Biochar addition, the thermophilic (57.3 °C) temperature lasted for more than three days. The Biochar addition decreased the bulk density by 7% in the initial feedstock. It also aided in increasing the initial value of the free air space and porosity of the mixture.”
Dear Subscriber,

We hope that you are finding IBI news, networking, webinars, workshops, study tours, and publications to be useful. The International Biochar Initiative is member-supported and dedicated to developing biochar solutions through networking, education, and demonstration. Our newsletters highlight developments in industry and research. Our webinars exchange valuable information and experience. Our study tours demonstrate biochar in action. Our policy initiatives promote biochar production and use.

Share the vision - Join the International Biochar Initiative

- Join IBI to connect with others to develop biochar-based solutions.
- Join IBI to learn about biochar technologies, markets and uses.
- Join IBI to visit demonstrations of biochar in action.
- Join IBI to help protect and restore our soils and promote sustainable biomass production through carbon farming.

Share the vision – let’s produce 1 billion tons of biochar per year within 50 years for:

- Soil Health
- Food Security
- Clean Water
- Environmental protection
- Climate Resilience

Join IBI at http://www.biochar-international.org/join

We look forward to working with you.

Tom Miles
Chair, International Biochar Initiative

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