Highlights from this Month’s News

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

- A biochar hub for Africa
- Valorizing biosolids
- Stopping algae blooms
- A recycler does biochar

Welcome, New Corporate Members:

enviraPAC Monticello LLC
Monticello, Arkansas
https://envira-pac.com/
Producer of Bio-Based Engineered Carbon from pine wood.
### Current Members

- CONCORD BLUE ENERGY
- COOL PLANET
- CORNELL UNIVERSITY
- CUMMINS, INC
- EARTH SYSTEMS CONSULTING
- ECODERA
- ECOTOPIC AB
- ENVIRAPAC MONTICELLO LLC
- HUSK VENTURES SL
- ICHAR ITALIAN BIOCHAR ASSOCIATION
- INTEGRITY INDUSTRIAL SERVICES
- INTERNATIONAL BIOREFINERIES, LLC
- K&S INDUSTRIES
- KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH (KISR)
- LERNZ ENTERPRISES INC
- LERCHENMUELLER CONSULTING
- METZLER FOREST PRODUCTS LLC
- NATIONAL CARBON TECHNOLOGIES
- NATIVE VILLAGE OF KIVALINA, ALASKA
- NO FOSSIL FUEL, LLC / CLEAN POWER
- NORTH SUBURBAN TREE SERVICE
- NORTHERN CALAMIAN FARMING INC.
- NOVOCARBO
- OREGON BIOCHAR SOLUTIONS
- POLYTECHNIK
- PURE LIFE CARBON INC.
- PYREG GMBH
- PYROCAL PTY, LTD
- RAINBOW BEE EATER PTY LTD
- SCANSHIP AS
- SENECA FARMS BIOCHAR LLC
- SIMEKEN INC.
- SLB GROUPE (CAMPOS VERDES, SYLVA FERTILIS)
- SOILTEST FARM CONSULTANTS
- SON AMAR
- SONNENERDE - KULTURERDEN GMBH
- STANDARD BIO AS
- SUMITOMO SHI FW

### Current Members

- SYNCRAFT
- THOMAS CASTEN
- TWO DOT WIND
- UNIVERSITY OF NOTTINGHAM
- UPM UMWELT-PROJEKT- MANAGEMENT GMBH
- VANMANDER SL
- WAKEFIELD BIOCHAR
- WOOD GROUP USA
- WOODCO RENEWABLE ENERGY LTD
- YORK REGION ENVIRONMENTAL ALLIANCE
The World Wildlife Fund (WWF) has been pointing out how weak customs regulations have cast a blind eye to unsustainable forestry in countries that export charcoal. A 2018 study of German charcoal imports led to a wider study of most EU countries just published. By identifying tree species of charcoal samples, researchers discovered that much of the charcoal imported to Europe likely comes from illegally logged forests in tropical and sub-tropical areas and is often incorrectly labelled as to wood species.

The issue has not been studied as well in other regions, but, for example, the U.S. (no paragon of sustainable forestry) imports charcoal mainly from Mexico, which is suffering from deforestation like so many other tropical/sub-tropical countries.

While the biochar industry cannot clean up the charcoal industry’s act, we are beginning to see preventive steps taken to keep us from going down that path. The ‘European Biochar Certificate (EBC) - Guidelines for a Sustainable Production of Biochar’ stipulates:

“Biochar may only be produced from forest wood if sustainable management of the corresponding forest can be proven by PEFC or FSC certificates or by comparable regional standards or laws.”

The best insurance policies we currently have of sustainably managed wood sources are these certificates. The EBC guidelines requires them. The new ANZBIG Code of Practice for the Sustainable Production and Use of Biochar recommends them.

If biochar suppliers do use imports, they should also pay heed to the following demands made by the WWF in their 2018 report:

- More transparency: information about wood types and the origin of wood should be provided on the packaging, so that consumers can make a free choice.
- Trade must never be allowed in charcoal from at-risk countries such as Nigeria, Paraguay, Ukraine, [or Somalia] – unless the goods are at least FSC-certified.
- Overall, a conversion to FSC-certified products must take place.
- As a rule, from the standpoint of reducing greenhouse gas emissions, the best place to use biochar is close to its source, but whether it is transported or not, let us be sure to do no harm.

Opinions expressed or implied herein are solely those of the author and may not reflect the official position of IBI.
Regional Briefs

What is The Africa Biochar Partnership?

Alleviating poverty, inverting environmental degradation, mitigating climate change, and ensuring food security in Africa

Lucia Brusegan and Veronica Kittl

Africa faces severe problems of land degradation, soil erosion, deforestation, and unsustainable use of fuels for cooking. The high rate of soil nutrient depletion and deforestation for agriculture, pastoral activities, and human settlement development, as well as fuel collection for energy production, threatens livelihoods. This calls for improved biomass and soil management.

Indeed, the African region has abundant biomass resources which are available almost throughout the year. Many and different types of biomass residues can feed a pyrolytic device. Crop residues are the largest source of non-timber biomass fuel – e.g. straw, stems, stalks, leaves, husks, shells, peel, lint, pulp, stubble, peanut shells, etc. which come from cereals (such as, rice, wheat, maize or corn, sorghum, barley, millet), cotton, groundnut, jute, legumes and vegetables (e.g. tomato, bean, soy), coffee, cocoa, olives, tea, fruits (e.g. banana, mango, coco, cashew), and palm oil. If conserved, they can become inputs for systems arranged around biochar. Such biochar systems ensure a sustainable use of resources and relevant impacts in terms of crop yield and socioeconomic development, particularly of poor, rural areas. They address several UN Sustainable Development Goals, i.e. no poverty, zero hunger, gender equality, affordable and clean energy, responsible consumption and production and climate action. Indeed, biochar systems contribute to improve the current situation through channeling resources for producing biochar while providing multiple benefits such as affordable and clean energy, carbon sequestration, reduction of the pressure on forests, landscape restoration, reduction of desertification, enhancement of soil productivity, health amelioration, private sector development, and women empowerment.

For all these reasons, a group of organizations active with biochar-related activities in several African countries launched the Africa Biochar Partnership (ABP). ABP is the continental platform for advancing biochar systems in Africa. The initiative is led by African organizations, for Africans, and with important cooperation with international actors in and outside Africa. The African Union Commission endorsed the partnership. ABP serves as a hub for continental and regional institutions, universities, research centers, foundations, NGOs, enterprises and practitioners for peer-to-peer exchange, learning, training, and coordination of programs to foster biochar systems development and implementation in Africa.

More info: https://biocharafrica.org/
Contact: info@biocharafrica.org
Australia and the Pacific

- South East Water, a Victorian government utility, is building a pilot plant to try out what the inventor describes as a high-temperature pyrolysis biosolids reactor with “radically optimized heat and mass transfer, ... while shrinking the technology to make it highly mobile. There are no reactors available that can achieve such phenomenal heat and mass integration, in such a small and cost-effective package.” The biochar produced from biosolids pyrolysis is laden with heavy metals which improve its catalytic capabilities. This biochar is thence used as a catalyst to produce hydrogen from biogas, in the process of which it becomes coated with nanomaterials, which improves the biochar’s performance for follow-on use in a range of possible environmental and energy applications.

- Rainbow Bee Eater, co-developer of the ECHO2 biochar system, will receive a portion of a $5 million purchase by Shopify of purc carbon removal certificates.

- One of the best PR segments to come from TV news anywhere aired this month on 1 News, New Zealand.

- Australia has announced their decision to prioritize development of five technologies to mitigate global greenhouse gasses. They are clean hydrogen, energy storage, low carbon materials (steel and aluminium), carbon capture and storage (CCS), and soil carbon. While the government’s first Low Emissions Technology Statement does not explicitly mention biochar, it is a mark of biochar’s versatility that every one of these efforts can be implemented with biochar technology. The rally of biochar advocates to educate officials and the citizenry about biochar showed that it already has a lot of momentum down under.

North America

- The USDA wants to assist in mainstreaming agricultural innovations in pursuit of its goal of increasing U.S. agricultural production by 40%. The new Agricultural Innovation Agenda website seeks to collect and disseminate information about successful innovations. There is currently a Request for Information (RFI) asking for descriptions of innovative, ready to go (fully developed, field tested, and completed independent research trials) technologies and practices that can be deployed across U.S. agriculture.

- Project success stories from Arizona, Kansas, North Dakota, and Nebraska stem from their inclusion of biochar in the Council of Western State Forester’s review of 2020 highlighting efforts state forestry organizations are taking to build markets.

- “Sugarcane growers in Louisiana, Brazil, Australia, Zimbabwe and elsewhere in the world have switched from pre-harvest burning to modern, sustainable green harvesting.” Green harvesting, which uses modern mechanical harvesters to separate sugarcane leaves and tops (“trash”) from the sugar-bearing stalk and eliminates the need to burn in situ, provides feedstock for biochar. Opportunity awaits in Florida.

- Putting biochar on the International Space Station should lift its profile.

- The reedbed component of Cumberland, British Colombia’s new wastewater treatment ponds will include biochar.

- The Clean Water Machine that a University of Idaho team took to the final competition of an EPA contest to help prevent toxic algae blooms in surface water will be tested further at Florida’s St. Johns River and Oregon’s Klamath Basin with the $1M grant the team has received from the EPA.
An almond hulling facility in California is preparing to install two power plants run off hulls and other woody biomass which will provide electricity and char to use on almond orchards.

A new report titled, *The Potential for Biochar to Enhance Sustainability in the Dairy Industry* written by IBI Chair Kathleen Draper (working for the Ithaka Institute for Carbon Intelligence) and Shannan Sweet of Cornell University has just been published as part of the second phase of a larger effort that seeks to ultimately conduct demonstrations on New York dairy farms.

Much of what the Natural Resources Research Institute in Michigan is doing deals with biochar.

The Eastern Biochar Initiative is looking for supporters to help make National Biochar Week (November 16 – 20, 2020) a great success.

Construction and demolition material presents an opportunity for recyclers to expand into biochar production.

Europe

A recycling company in Södertälje municipality outside of Stockholm is moving into the business of making biochar from tree cuttings when they start-up their Charmaker Mobile Pyrolysis Plant (MPP 40) to be delivered by Earth Systems of Australia later this year. They plan to sell biochar on the retail market and to companies for addition to soil mixes and composting.

Two European biochar companies included in Shopify’s $5 million purchase of puro carbon removal certificates are Carbofex and Ecoera.

Biochar-related opportunities, jobs, and education

Two Next Gen Fertilizer Challenges are being proffered by the U.S. government. Registrants must submit their entries by October 30, 2020, for the EEFs: Environmental and Agronomic Challenge and by November 30, 2020, for the Next Gen Fertilizer Innovations Challenge. (EEF is a term for new formulations that control fertilizer release or alter reactions that reduce nutrient losses to the environment.) The EEF challenge will qualify winners to go further with greenhouse trials and demonstrations, while the Innovations challenge will award any U.S. winners with a cash prize of at least $10,000. All winners will receive public recognition. Contestants’ intellectual property rights will be maintained. Winners will be announced in the winter of 2021.

4p1000, the global initiative working on soil carbon sequestration, is organizing task forces to tackle the 24 objectives in its new strategic plan. There is something for anybody who can offer their services, including leadership roles for IBI members due to our organization’s partnership with 4p1000. The wiki where you can sign up explains everything in vivid detail.

A new Special Issue titled "Biochar-based composites for Environmental Remediation" is now open and accepting submissions. Deadline is the April 30, 2021.
The prestigious journal *Chemosphere* is running a special issue entitled "Converting solid biomass waste into nanomaterial for the treatment of hazardous waste ". Paper submissions are being accepted from October 1, 2020 to March 31, 2021.

USBI has created a new learning center available to all. In addition to numerous links about biochar, new resources include:

**The Biochar Atlas** - an online, interactive tool from the USDA-ARS. The tool provides guidance to farmers, gardeners, and other end-users on the potential benefits of biochar, including decision support tools to select biochar types and amendment rates. **Learning level:** Multiple

**Green Roofs, Biochar, and You** This publication covers the benefits of biochar in green roofs and outlines a project completed at the University of Nebraska - Lincoln. **Learning level:** Intermediate

**Combined Heat and Biochar Technology Assessment for a Composting Operation** This USBI White Paper by Kelpie Wilson and Tom Miles compares several different technologies currently available from vendors that can provide heat energy and biochar for a hypothetical vermicompost operation. **Learning level:** Intermediate

**The 3R Principles for Applying Biochar to Improve Soil Health** This open source paper proposes the 3R principles for applying biochar to soils: right biochar source, right application rate, and right placement in soil. **Learning level:** Advanced

**Biochar concrete** is coming into its own. View a video on the history, current science, and outlook for this major application sector based on work being done at the National University of Singapore.

**News You can Use**

Simple and effective water treatment methods are detailed in the ongoing release of book chapters of *A Field Guide to Biochar Water Treatment* by Dr. Josh Kearns.
Calendar

National Biochar Week
https://www.easternbiochar.org/

COMPOST 2021 (USCC)
Jan 26 – 27, 2021
https://compostconference.com/

PYRO 2021

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New Research

Here are some papers written by IBI members out of the roughly 280 articles included in the latest monthly list available on your IBI Members Only Home page. These are compiled by Abhilasha Tripathi to bring you the technical side of the biochar news. If you really want to know what is in the works, exploring this list every month will give a much fuller picture than you get by reading this newsletter. You can receive the full research paper list by e-mail every month by joining IBI.

† Predicting power, profit, and performance:


From the Abstract: "... to predict the yields and characteristics of biochar produced from slow pyrolysis of different feedstocks under designed processing conditions. ... The best overall energy and climate change performances are achieved via pyrolysis of lignocellulosic biomass at high temperature, while the best [minimum product selling price] is achieved with the pyrolysis of sludge at low temperature."

† A major role to play:


From the Paper: "Progress is already being made with biochar characterization, standards, market, and technology development, and understanding which chars are best suited for which applications. ... For the industry to be even more successful, there is a need for further public education ..."

† From ragweed to riches:


From the Abstract: "The maximum adsorption capacity of RB450 for Cd(II) (139 mg/g) and Pb(II) (358.7 mg/g) was much higher than that shown in previous studies. The immobilized Cd(II) and Pb(II) fraction on RB450, RB550, HB450 and HB550 was mainly attributable to the acid soluble and non-available fractions."
Send forth chariots of fire:


From the Abstract: "... when the emissions from natural decay of slash (if left unprocessed) are accounted as avoided emissions, the systems with and without dryer result in the respective GHG emission benefits of 6.61 and 4.85 ton CO\textsubscript{2} eq/ton biochar-C. The systems reach their break-even point when CO\textsubscript{2} emission benefits are valued at a minimum of 85.7–118.1 USD/ton CO\textsubscript{2}.”

www.biochar-international.org  info@biochar-international.org

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Work with IBI!

IBI offers the following options for collaboration with scientific projects. Select the package best for your organization and complete the accompanying payment form.

☐ Silver Package 1

a) IBI is posting a project description on its website with contact details, links, photos; the website can be updated once per year.
b) IBI is sending out a project update in the monthly newsletter twice per year of the project
c) Publications published by the project are guaranteed to be listed in the monthly IBI publications update.
d) In-depth discussion of one publication per year by a member of the IBI Scientific Committee, sent out in the monthly IBI publication update and posted on the project site of IBI.

Costs: $1,000 per project year, payable at the beginning of the project year

☐ Gold Package 2

a) Includes all services of Package 1.
b) Webinar on project plans, progress or outcomes with a topic appropriate for IBI audience (one-hour webinar with about 50-100 participants worldwide), moderated by IBI, advertised globally, with Q&A session). Webinar is archived on the IBI website and can be seen by IBI members (add $1,000 for open access).

Costs: $4,000 per project year, payable at the beginning of the project year

☐ Platinum Package 3

a) Includes all services of Packages 1 and 2.
b) IBI excursion to your project at a time when it is attractive to a diverse audience ranging from scientists to industry representatives and policy makers, typically 40 attendees, who will pay for their own travel and a registration fee (see https://biochar-international.org/event/ibi-biochar-study-tour-finland/ for an example of previous excursions).

Costs: $15,000 per project year, payable at the beginning of the project year

Packages can vary for each project year (i.e., a project may opt for Package 1 in year 1 and 2 of their project and for Package 2 in year 3). Please inquire for additional options and combination of services not mentioned above.

IBI will provide a letter of commitment that can be included in your proposal to a donor. If the proposal is approved and funded, IBI can work with purchase orders or contracts, as is easiest for the project.
INTERNATIONAL BIOCHAR INITIATIVE

IBI COLLABORATION WITH SCIENTIFIC PROJECTS

PLEASE PROVIDE YOUR NAME AND CURRENT BILLING ADDRESS:

Collaboration Options (Prices in U.S. Dollars)

☐ Platinum: $15,000
☐ Gold: $4,000
☐ Optional open webinar access (+$1,000)
☐ Silver: $1,000

Total amount enclosed: $_______

☐ check in U.S. dollars  ☐ cash in U.S. dollars  ☐ MC/Visa number: ____________________________

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Thank you for your support!