Highlights from this Month’s News

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

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WELCOME, NEW CORPORATE MEMBERS

QUALITY FLOW, INC.
https://www.qualityflow.com/
Northbrook, IL, USA

Current Members

10,000 YEARS INSTITUTE
ADVANCED RESILIENT BIOCARBON
AGRINOVA
AMERICAN BIOCHAR COMPANY
ARIES CLEAN ENERGY
BC BIOCARBON
BELLA BIOCHAR CORPORATION
BIO GREEN WOODS, S.A.
BIOCHAR WORKS
BLACK & VEATCH — HONG KONG
CARBOFEX OY
CARBON GOLD LTD
CHAMPION WASTE & RECYCLING SERVICES
CIRCLE CARBON S.L.
CITY LIGHT CAPITAL
CLEAN MAINE CARBON
CORIGIN SOLUTIONS LLC
CORNELL UNIVERSITY
CUMMINS, INC.
ECOERA AB
ECOTOPIC AB
ENAGON LLC
ENVIRAPAC MONTICELLO
FOREST CREEK RESTORATION
FORLIANCE GMBH
GENESIS BIOCHAR
With 35 years' experience in water treatment, we've earned our industry reputation as “the water people.”

Since 1984, Quality Flow has been a pioneer in addressing the importance of water quality in food and beverage safety. Not only do we have the expertise to accurately diagnose any problems with your water, we also have the experience to prescribe the most practical and cost-effective solutions.

We are recognized specialists and consultants in all aspects of water quality from setting standards, testing water supplies, identifying and supplying treatment options and overseeing ongoing water quality control.

In fact, Quality Flow is the premier independent source for the world’s leading brands of water treatment, as well as the exclusive seller of our own line of value-priced water filters manufactured by Omnipure Filter Company, Caldwell, Idaho. Omnipure filters are third-party certified by NSF/ANSI and are the first eco-friendly water filter brand to achieve the WQA/ANSI S-803 sustainability certification.

ENAGON LLC
https://www.enagonllc.com/
Saugatuck, MI
Enagon's proprietary process re-envisioned traditional drying and size reduction, reconfiguring it to economically meet modern industry needs.

We're on a mission to make the world a better place by diverting material from landfills and waterways, finding novel and innovative market applications for those materials through our processing.

We're committed to working with companies worldwide to help reduce waste and create a greener footprint for humanity.

STANDARD BIOCARBON CORPORATION
https://www.standardbiocarbon.com/
Portland, ME, USA
A producer of high quality, high quantity biocarbon.

For over 100 years, the Great Northern Paper Company mill in East Millinocket, Maine was one of the largest paper mills in the world, processing nearly ½ million tons/year of wood into phone book paper. Today, Standard Biocarbon is reclaiming the shuttered 19th-century mill at the gateway to 17-million acres of working forests, to create a new carbon extraction industry. If returned to historic capacity, the site would remove over 350,000 tons/yr. of atmospheric CO2, create a useful product and anchor the regional economy.
Pyrocal specialises in the design, build and installation of thermal carbonisation systems that extract value from biomass and residual waste. The biomass and residual waste is converted into thermal energy and stabilised biocarbon, with a reduction in volume. Pyrocal systems have been implemented commercially since 2014 and deployed across eight countries in a variety of applications. We also produce biocarbon/biochar.

... and Renewing Corporate and Organization Members.

BC Biocarbon
McBride, BC, Canada
https://www.bcbiocarbon.com/
We are a company developed from a pragmatic approach to using biomass wastes to derive value, and drive carbon reductions.

Started in 2011 by Phil Marsh, a retired Royal Canadian Air Force Pilot and generation farmer of the beautiful Robson Valley, BC Biocarbon has become an innovative waste-to-resource company with products for a regenerative economy.

Our Focus has been to develop a technology which refines a wide variety of carbonaceous material into:
- solids (biochar),
- liquids (wood vinegar and tars), and
- gases (producer gas)

Our Goal is to produce and manufacture biogenic carbon products for various uses including land and water remediation, carbon sequestration, and the direct substitution of fossil fuels and their related products.

Our Technology uses a refined pyrolysis system to produce products in system called a biorefinery.
- Biomass is heated in a low oxygen environment driving off the volatiles and leaving a highly concentrated carbon in the form of chars and tars.
- Liquids are separated for further refining.
- Non-condensable gases are combusted for process heat.

Our technology is a continuous flow, single pass process, not based on single batches. The only external input is electricity.

Two Dot Wind BVE
Evanston, IL / Montana
Two Dot Wind BE is a wind & carbon capture development company.
**FROM THE CHAIR**

*by Kathleen Draper*

Fortune magazine wrote two articles on biochar in one month. Microsoft and other large multinationals are now promoting their purchases of biochar as a durable carbon removal product. It seems with every passing day that biochar is getting more and more attention from a broader, more diversified group of stakeholders.

We also see this in the growing range of individuals and corporate members joining IBI. Since last year, our membership revenues have grown by nearly 30% and we are seeing a shift towards a larger number of Business members supporting the organization. Our ambitions this year are to build capacity to support this ever-growing interest in biochar to enable the industry to scale quickly and sustainably. But we realize this will be a global effort which will need the time and talents of many individuals, NGOs, funding sources and entrepreneurs. If you have an interest in collaborating with IBI to help us reach these goals, please reach out and tell us how you would like to help! info@biochar-international.org.

**IN THE NEWS**


Patriot Hydrogen Identifies Biochar as Source of Income from its P2H Units for Hydrogen and Power Production

July 6, 2021
Regional Briefs

North America

What’s the Deal with Biochar? by Samantha Smith | Sierra Club (July 17, 2021)
Regenerative Agriculture Practices Fact Sheet on biochar
Local biochar project could launch this summer (June 30, 2021)
https://methowvalleynews.com/2021/06/30/local-biochar-project-could-launch-this-summer/

"BRINGING BIOCHAR BACK" — Northwest Natural Resource Group (July 7, 2021. From their Blog)
The summary includes multiple references:

- **General Information**
  - Forage & Restore Char (benefits of biochar and how to make biochar)
  - Pacific North West Biochar Atlas (resources for farmers, gardeners, and for biochar producers. Case studies from biochar early adopters.)
  - Biochar Production for Forestry, Farms, and Community (biochar as solution for agricultural soil fertility and greenhouse gas accumulation)

- **Analysis**
  - Biochar Market Analysis for San Juan County and the Pacific Northwest (understand if biochar is a growing market, and what potential exists for expansion)
  - SJC Woody Biomass Assessment (feedstock supply and demand in the San Juan Islands.)

- **How-to Tools & Methods**
  - Recording of Workshop: Biochar Production (Biochar production and properties)
  - Woody Biomass Production Methods (Procedures for landowners)
  - How to Measure Woody Biomass in Your Forest (practical inventory system for estimating the volume of timber and woody biomass in their forest.)
  - Woody Biomass Calculator (convert basic tree measurements and forest data into estimates of timber and biomass volumes.)

As blue-green algae threatens R.I. waters, Newport neighbors work to heal a troubled pond (July 12, 2021) https://thepublicsradio.org/article/as-blue-green-algae-threatens-r-i-waters-newport-neighbors-work-to-heal-a-troubled-pond

Europe


**Europe Biochar Market Sales, Revenue Value, And Industry Expansion Strategies till 2028**

Published: July 13, 2021 at 7:45 a.m. ET

Research Nester has released a report titled "Europe Biochar Market -Demand Analysis & Opportunity Outlook 2028"

Request Sample To Learn More About This Report @ [https://www.researchnester.com/sample-request-2664](https://www.researchnester.com/sample-request-2664)

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Trans-Atlantic cooperation: See the reference to Standard Biocarbon Corporation and Germany's PYREG under North America.

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**Africa**


From the abstract:

Unlike other NETs, [biochar] can potentially be used to mitigate global climate change while adding to local resilience in countries highly exposed and sensitive to impacts of climate change, such as least-developed countries (LDCs). ………………… Nine historical and existing biochar projects in Tanzania are mapped in order to analyse problems, goals and common trade-offs associated with small to medium-scale biochar production in LDCs. The mapping is based on a literature and document study, interviews with project actors, and on-site visits to biochar projects during 2019.

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**Asia Pacific**

Teaming up on Biochar in Tasmania [https://www.examiner.com.au/story/7347234/teaming-up-on-biochar/?cs=95&fbclid=IwAR3GJvlwvG0WsEDWOQnDJZML0X0A2FROnnSQO4HS7frJgyeRtY2DoW3jc](https://www.examiner.com.au/story/7347234/teaming-up-on-biochar/?cs=95&fbclid=IwAR3GJvlwvG0WsEDWOQnDJZML0X0A2FROnnSQO4HS7frJgyeRtY2DoW3jc)

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**BIOCHAR JOB OPPORTUNITIES**

IBI is currently looking to hire an Executive Director. Go to: [https://biochar-international.org/wp-content/uploads/2021/06/IBI-Executive-Director-PositionAnnouncement-06-2021.pdf](https://biochar-international.org/wp-content/uploads/2021/06/IBI-Executive-Director-PositionAnnouncement-06-2021.pdf)

**Swedish University of Agricultural Sciences (SLU)** PhD Student in Environmental systems analysis of biochar – Sweden

In this month’s update on the biochar situation in Latin America, I interviewed Kevin Hilares who studied at Universidad Nacional Agraria La Molina in Lima, Peru. Four years ago, Kevin and his professor and colleague Wilson Castañeda started investigating biochar and then in 2020 they developed their own company Ecobiotecnology Perú. The company’s main focus is the design and commercialization of low-cost pyrolysis plants (Kon-Tiki kilns) for use within local municipalities, enabling them to manage their solid organic waste. This enables them to educate and familiarize the uses with the production and benefits of biochar. At the beginning of this year, they had already developed their first prototype with the Magdalena del Mar municipality, with a stainless-steel kiln that has a volume of 900 L where an average of 1.5 tons per batch can be processed. It has a turning system it can be disassembled and moved unlike other Kon-Tiki ovens, they quench the biochar with a pulverized water and when the temperature has dropped, they turn the biochar in a space built for this process.

In several Latin American countries, the most widely used way to manage green waste is through compost, which is why in the case of this company they use waste with a low decomposition rate (tree pruning) to do the biochar so the municipalities can continue using the compost production too. As a second project, they have contacted the municipality of Lince where they will develop a composting and pyrolysis recovery plant and in the future, their interest is to have their own plant to produce biochar and participate in organic agriculture markets.

If you live in Latin America and you want to include your production of biochar in the database we are making, please write me at this email: camilaquije97@gmail.com.

Update by Nithin Das, National University of Singapore, Singapore.

In this month’s update on biochar work, I have been collecting data from the Asia-Pacific Region on biochar. The data I collected will be looking into the amount of biomass in particular reference to additionality, how much biomass is turned in as well as looking into building an argument for the government in terms of the nationally determined biochar potential. The data I collect includes qualitative component as well which will mainly look into scaling industrial production as well as to see the knowledge levels of the equipment suppliers in terms of biochar data. The difficulties I faced in obtaining the full data was that not all companies were willing to share with me their data without something in return for them. This is something that I
found difficulty with and have brought it up in our meetings. The data I collect in the upcoming weeks will look into how much is the average food waste per household and to see the potential of using that data as a starting point for biostock data. I hope to overcome the foreseeable challenges and to ensure the accuracy of the data collected. In the upcoming weeks, I will be collecting data from various companies in the Asia-Pacific region as I have exhausted most of the Singapore companies involved. This has been a rather rewarding internship and I hope to continue my work representing the Asia Pacific Region.

**CALENDAR**


Calls for Abstracts are now open until Thursday August 5.

Subject areas: Food, Fibre and Recreation, Infrastructure, Energy, Drawdown Markets, Biosphere Standards (air, soil, water, char analysis).

2021 UN Climate Change Conference (COP26) November 1-12, 2021 Glasgow, Scotland, UK. - [https://ukcop26.org](https://ukcop26.org)
The development of sustainable waste management strategies has become a major concern throughout the world. This conference focuses on “recycling” and “recovery” of waste material while paving the way towards circular economy, land reclamation, and water and wastewater treatments.

- Biochar is mentioned in the agendas of:
  - Session IV (Reducing, Recycling and Recovery of Agricultural and Food Waste)
  - Session V (Biomass Valorization: Waste to Resources.)
- Prof. Johannes Lehmann will discuss biochar during Session VI (Governmental Policy on Waste Management and Valorization)
NEW RESEARCH

From Google Scholar

Papers in this list are from last month’s new ‘biochar’ entries in Google Scholar. Quotes are from the papers, which are accessible through the links provided. These have been extracted by Abhilasha Tripathi PhD Candidate, Indian Institute of Technology, Kanpur to keep the length of this addendum manageable, yet informative enough to prompt further investigation by readers. Emphasis was placed on highlighting new findings leading to practical application, but with the expectation that decisions will be informed by accessing the full publication.
URLs followed by the padlock symbol link to open access articles. Doctorand Tripathi’s list of excerpts (over 260 this month) is published in the Members Only section of the IBI website. 
https://biochar-international.org/members-only-home/ (password protected). Naturally, that listing includes multiple articles dealing with biochar in agriculture. For a change, this month, the six examples below include references to biochar involved in other applications:

- The hydrogen economy
- Invasive species
- Cement composites
- NETs (negative emissions technologies) / CDR (carbon dioxide reduction) / Carbon sequestration (as soil carbon storage).

This publication is co-authored by IBI co-founder, Prof. Johannes Lehmann. – Ed.

- Bioremediation

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https://www.sciencedirect.com/science/article/pii/S0048969721032770

From the Abstract: “A potential promoting mechanism was proposed that biochar prepared at low temperature boosted the hydrogen production with redox activity, while that at high temperature achieved the promotion via cell growth enhancement.”

https://doi.org/10.1007/s42398-021-00185-7

From the Abstract: “The conversion of E. crassipes biomass in to biochar not only provides a significantly better alternative to chemical fertilizers but also a sustainable management strategy of this invasive plant species.”

Opinion about E. crassipes = water hyacinth (not a critique of the publication):
Water hyacinth is arguably the world’s worst aquatic weed because of its invasive potential, negative impact on aquatic ecosystems, its persistence and the cost to control it. Finding a beneficial and economic way to control or eradicate this species should show advantages internationally.

-Ed.

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https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.1c02008?casa_token=AW29lWgBT3oAAAAA:SA-gp3Vu5AByPPMjVI00HGnc1iEwELqTSpWbIGAanCA7V5zZfrbuyzcYijQ6j4eufNl2tKjVRUiwwdxQ
From the Abstract: “The use of CO$_2$ curing effectively accelerated the carbonation of pastes. Hydrated magnesium carbonates were preferentially formed in CO$_2$-cured hydration of magnesia cement (MC) pastes, whereas CaCO$_3$ was preferentially generated in CO$_2$-cured Portland binary cement (MP) pastes.”


From the Abstract: “Overall, a majority of the sample expressed support for Soil Carbon Storage—regardless of whether the strategy involved the use of biochar (a form of charcoal made from organic matter) or not (55% and 62%, respectively)—placing Soil Carbon Storage ahead of Bioenergy plus Carbon Capture and Storage (32%) and Direct Air Capture (25%), and behind only Afforestation and Reforestation (73%), in terms of public support.”


From the Abstract: “...the inoculation of biochar-immobilized a biosurfactant-producing bacterium, (LQ2) demonstrated superior efficiency in removing diesel oil (94.7%, reduction from 169.2 mg to 8.91 mg) over a seven-day period compared to free-cell culture (54.4%), through both biodegradation and adsorption.”
Improving seawater desalination efficiency by solar driven interfacial evaporation based on biochar evaporator of Nannochloropsis oculata residue. Elsevier.

From the Abstract: “MBSIE attains a maximum seawater evaporation rate of 1.165 kg/(m²-h) under one Sun irradiation intensity. The total dissolved solids and salinity of the produced fresh water was 265 mg/L and 0.06‰, respectively. This quality of freshwater could meet domestic water standards.”
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/](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: ________________________________

Exp. Date: _________  3-Digit Security Code: _________  Name on Card: ________________________________

Email receipt to: __________________________________ / Phone #: ________________________________

Please enclose check or cash or provide credit card information, and send to the IBI Office:
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(1211 Connecticut Avenue, NW, Suite 650, Washington, DC 20036, USA).

Thank you for your support!