

DECEMBER 2020



News from the International Biochar Initiative

IBI is a non-profit organization that provides a platform for fostering stakeholder collaboration, good industry practices, and environmental and ethical standards to support biochar systems that are safe and economically viable.

Help put the Earth Back in the Black

Highlights from this Month's News

[Robert Gillett, Editor](#)

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

- ❖ *IBI enables industry transformation*
- ❖ *Skyrocketing research*
- ❖ *Stubble-burning solutions sweeping southern Asia*
- ❖ *Meet the new (Char)Boss*

Welcome, New Corporate Members ...

FOREST CREEK RESTORATION, INC.

McArthur, CA, USA

Sustaining Member

Development of bioenergy, meadow and forest health projects.

CLEAN MAINE CARBON

Oswego, NY, USA

Adding Biochar production to an existing Biomass power plant.

And Returning Sustaining Member:

ECOERA AB

www.Ecoera.se

Sweden

Our mission is to remove carbon dioxide from the atmosphere at an industrial capacity with the aim to reach pre-industrial levels of 350 ppm CO₂ before the end of the century, while making the agricultural land fertile enough to feed 10 billion people on this planet.

ECOERA Millennium Biochar and the ECOERA Millennium Carbon Removal platform is a result from research and innovation starting in



Current Members

[10,000 YEARS INSTITUTE](#)

[AGRINOVA](#)

[AMERICA SEQUESTERS CO2, LLC](#)

[APPLIED BIOMASS SOLUTIONS, LLC](#)

[ARIES CLEAN ENERGY](#)

[AUSTRALIA NEW ZEALAND BIOCHAR INITIATIVE INC. \(ANZBI\)](#)

[BC BIOCARBON](#)

[BEES SAS](#)

[BIO GREEN WOODS, S.A.](#)

[BIORESOURCE MANAGEMENT](#)

[BLACK & VEATCH – HONG KONG](#)

[CARBOFEX OY](#)

[CARBONFUTURE GMBH](#)

[CHAMPION WASTE & RECYCLING SERVICES](#)

[CIRCLE CARBON SL](#)

[CLEAN MAINE CARBON](#)

[CONCORD BLUE ENERGY](#)

[CORNELL UNIVERSITY](#)

[CUMMINS, INC.](#)

[ECOERA AB](#)

[ENVIRAPAC MONTICELLO](#)

[FOREST CREEK RESTORATION](#)

2009 as we began our journey with Sweden's first large-scale biochar application in West Sweden.

We are a Swedish biochar innovation company that has created a carbon removal market and is the current market leader in Biochar-only carbon sinks. We are turbocharging the biochar revolution by providing technologies, knowledge and tools enabling sustainable small-scale and urban agriculture. The company was founded 2007 at Chalmers Ventures with Skånefrö AB. We have been awarded the status as WWF Climate Solver company. With our partners, we provide a full platform for biochar production using designer biochar from pelletized agro-residue blends with full traceability from the source and content. All biochar used for the carbon removal is certified according to the strict Premium level of the European Biochar Certificate (EBC).

An Update from The Chair:

Dear IBI community,

Until recently the number of industries interested in biochar has been quite limited. Agriculture has historically been the mainstay. More recently industries such as environmental engineering and waste management have joined the fray. Things have begun to change dramatically ever since the IPCC Special Report in 2018 stated, for the first time, that reducing emissions is no longer sufficient to avert climate chaos. The report highlighted biochar as one of only a handful of viable carbon removal technologies (CDR). This enabled biochar to be used towards a country's National Determined Contribution (NDC) under the Paris Agreement. It also led to biochar being recognized as a valuable carbon removal product first on [Puro.earth](#)'s platform and then earlier this year on [CarbonFuture.earth](#)'s blockchain marketplace. Next year [VERRA](#) plans to develop and host their own biochar GHG methodology. More and more industries are committing to ambitious emission reduction targets including net zero and beyond. More than 1,000 leading companies have signed on to the Science Based Targets initiative which requires "Companies with residual emissions within their value chain are expected to neutralize those emissions with an equivalent amount of carbon dioxide removals". The big shift we are beginning to see is a call for carbon removal, not merely offsets. Tree planting has traditionally been the

Current Members

INTEGRITY INDUSTRIAL SERVICES

KUWAIT INSTITUTE FOR

SCIENTIFIC RESEARCH (KISR)

METZLER FOREST PRODUCTS LLC

NEBRASKA PUBLIC POWER DISTRICT

NORSK BIOKULLNETTVERK

NOVOCARBO

PURE LIFE CARBON INC.

PYROCAL PTY LTD.

RAINBOW BEE EATER PTY LTD

SCANSHIP AS

SIMEKEN INC.

SLB GROUPE (CAMPOS VERDES, SYLVA FERTILIS)

SONNENERDE – KULTURERDEN

STANDARD BIO AS

SYNCRAFT

TANMIAH FOOD CO.

TWO DOT WIND

UNIVERSITY OF NOTTINGHAM

UPM UMWELT-PROJEKT-MANAGEMENT GMBH

VANMANDER SL

WAKEFIELD BIOCHAR

WOKA FOUNDATION

WOOD GROUP USA

WOODCO RENEWABLE ENERGY LTD

CDR of choice but an increasing number of companies, cities and countries are beginning to discover and embrace biochar as part of their net-zero strategy.

Decarbonization will bring about rapid and profound changes in all industries. Some industries may be unrecognizable a decade from now as they shift from high emitting processes to low or emissions, regenerative practices and circular economies. Some will be able to decarbonize faster than others, requiring those that take longer to purchase significant amounts of carbon removal credits. The International Biochar Initiative **welcomes all industries to support our efforts** to ensure that biochar production and use is sustainable, safe, scalable and shovel-ready.

Here's to wishing 2021 becomes a pivotal year for the biochar community.

Kathleen Draper
IBI Board Chair

The Big Picture

Robert Gillett

With much of the world experiencing lockdowns, we are all getting an opportunity to improve our self-reliance. Faced with this imperative, many will explore better ways of making biochar. Necessity is the mother of invention. Pyrolytic stoves of various design could become the next hot item in home appliances.



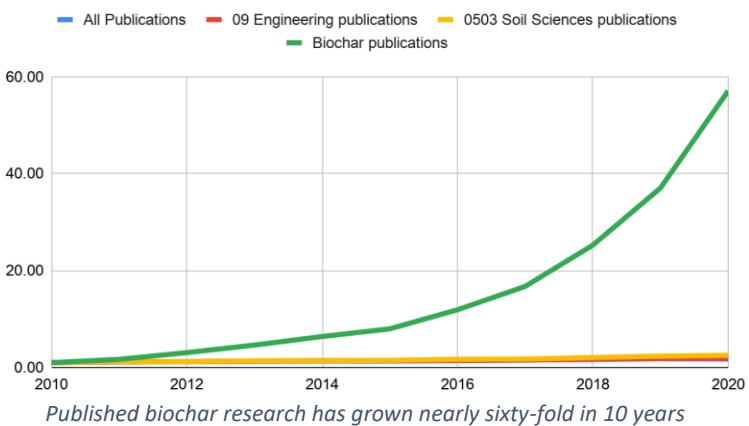
Pyrolytic stoves
by LS-Stoves,
Czech Republic
LS-stoves.cz



Not only do stay-at-home requirements apply to persons, but also extend to cities, provinces, and countries now, depending on where you live. Entire countries have had to become more self-reliant due to interrupted supply chains. Neo-colonial plundering of resources is declining as new levels of local enterprise are emerging.

Fortunately, one thing we don't need every country to reproduce is research. Localism does not necessitate parochialism. Biochar research worldwide is rising exponentially. A fortuitous case study was just released to demonstrate the utility of a research analytics tool called Dimensions. It shows, irrefutably and in detail, how biochar is gaining widespread interest.

Global Publications Growth (Normalised) 2010–2020



Though large-scale demonstration projects would raise even more interest, the existing evidence from this explosion of research is predominately supportive for numerous existing and prospective uses of biochar. In the burgeoning biochar revolution, bureaucracy will be outpaced by an emerging wave of inventors, entrepreneurs, and early adopters who can tell a clear winner when they see it. More than a methodical maturation of technology readiness, what the biochar industry needs to combat our global existential crisis is enculturation of what we already understand and find useful. IBI members have a leg up, receiving monthly digests of the latest biochar research abstracts as well as ready access to various publications and webinars.

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

Biochar-related opportunities, jobs, and education

Entrepreneurs! The [Carbon to Value \(C2V\) Initiative](#) will unlock a new carbontech economy, bringing innovative solutions to scale as rapidly as possible through the creation of a robust, powerful, and collaborative new ecosystem. Applications are now open for startups to join the first C2V accelerator cohort, which will run from May - November 2021.

Companies worldwide that use biochar in landscapes can join the [Climate Positive Design Challenge](#) which offers use of the Pathfinder 2.0 app to calculate how much CO₂ has been reduced or sequestered by various means.

Manufacturers of biochar production devices that are permitted for urban use in either the U.S. or Europe can provide details to the [Ithaka Institute](#) to be evaluated for a list of best-in-class technologies for urban biochar.

Verra, a world leader in carbon trading verification and accounting, is seeking a consultant to develop a comprehensive biochar greenhouse gas (GHG) accounting methodology. All [application](#) materials must be submitted via email by 15 January 2021.

The third [Green Carbon Webinar](#) series will continue through February. Each session consists of two 25-minute talks on progress with biochar, hydrochar, or activated carbon. Register for free now to receive access and updates. Videos from the two previous series of webinars are also available.

From the [ANZBIG annual report](#): ANZBIG continued to run valuable webinars throughout the course of the year. Usually seasonal, but now morphing into a monthly webinar towards the end of this year, some of the topics covered have been uploaded into the extensive ANZBIG [members only](#) library. These webinar recordings are available to non-members for \$59 apiece.

- BIOCHAR FOR BEEF, DAIRY & AVOCADO HEALTH & PRODUCTIVITY
- REFORESTATION USING DRONE TECHNOLOGY & BIOCHAR SEED BALLS
- PURO.EARTH – THE WORLD’S FIRST MARKETPLACE FOR CARBON REMOVAL
- THE WONDER OF WOOD VINEGAR
- HOW TO USE BIOCHAR BASED MATERIALS IN CONSTRUCTION
- BIOCHAR FOR ANIMAL HEALTH, WEALTH & CLIMATE

The first ANZBIG webinar for 2021 will be [Biochar for the Mining Sector](#) to be conducted on January 28.

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 until March 31, 2021.

A new Special Issue of *Energies* titled "Biochar from Biomass" is now open and [accepting submissions](#). Deadline for manuscript submissions: March 31, 2021.

A new Special Issue of *Molecules* titled "Biochar-based composites for Environmental Remediation" is now open and [accepting submissions](#). Deadline is April 30, 2021.

A Special Issue of *Forests* will be titled "Sustainability Assessments and Management of Woody Waste." Deadline for [manuscript submissions](#): August 10, 2021.

USBI has created a new [learning center](#) available to all. In addition to numerous links about biochar, new resources this month include:

[Sustainability Seminar Series: The Ingenuity of Biochar for Soil and Water Health](#) Healthy food and water are matters of national urgency, security and resilience, especially during the COVID 19 pandemic. This seminar from the Schaefer School of Engineering and Science at Stevens Institute of technology features presentations from biochar experts, Dr. Isobel Lima and Dominique Lueckenhoff on the role of biochar in sustainable systems for environmental management and human health protection.

[Scaling Biochar](#) This webinar series organized by the Sonoma Biochar Initiative and the California Biochar Association took place over two mornings on October 13 and 14. The site has links to recordings of more than twenty presentations by the most well-known and knowledgeable pioneers in the biochar field, each covering different aspects of the amazing biochar story in brief, 20-minute presentations.

[Weight Or Volume for Handling Biochar and Biomass?](#) Biomass and biochar products are often described in scientific literature by weight but handled and sold in the commercial space by volume. This article clarifies the different ways that density connects these two concepts and can be used to convert between these metrics.

[Using Fire to Cool the Earth - with Albert Bates: Reversing Climate Change](#) In this podcast, lawyer, teacher, and USBI board member Albert Bates explains that, if we turned our agricultural waste alone into biochar, we could reduce the number gigatons of CO₂ we emit each year (37) by one or two gigatons. But that's not all! This long-time director of the Tennessee Global Village Institute for Appropriate Technology also discusses multiple pathways for using biochar to get us back down to a safe level of 350 ppm of atmospheric CO₂ within decades.



Regional Briefs

South Asia

- Pakistan has a program that allows farmers to transport their [crop residue](#) to be exchanged for cash rather than burning it in the field. The central collection stations can then cleanly char the residue.
- At Jawaharlal Nehru University in New Delhi, the School of Environmental Sciences has developed several biochar-making reactors and has begun introducing farmers around the nearby city of Rohtak to the process of making biochar in an effort to [reduce pollution from stubble burning](#). Efforts along those lines will be magnified by a \$100 million grant from the Bezos Earth Fund to The Nature Conservancy which plans to use a portion to “reduce the carbon footprint of farming practices in [Northwest India](#) and curtail agriculture’s contribution to Delhi’s air pollution.”
- Indian entrepreneur Vidyut Mohan has been named by the UN Environment Program as a [Young Champion of the Earth](#) for the Asia and Pacific Region for his inventions, planning, and vision to involve 300 million farmers in making biochar rather than burn crop stubble in the field.

Africa

- In Senegal, groups of women in 18 villages are briquetting and charring crop residue [to limit deforestation](#) along the African Union’s Great Green Wall, seeking to hold back desertification of the Sahel.

Australia

- Using the heat from pyrolysis to drive a [Barton-cycle engine](#) is a new way to harness bioenergy while making biochar.
- A [sandalwood](#) grower in Western Australia makes biochar from old [host trees](#) to improve soil on the plantation.

North America

- The USDA Forest Service has partnered with Air Burners, Inc., patenting a mobile air curtain burner that quenches biochar before expelling it, resulting in improved product yield. The [CharBoss](#) processes 1 to 2 tons of minimally prepared woody biomass per hour.

- A [tree removal](#) company is using biochar production to help level out impacts of a volatile timber market.
- A company in Florida has found a niche market for their wood biochar: [aquarium filter media](#).
- A senior at Lynbrook High School in San Jose, California created a low cost [biochar filter](#) that removes contaminants, winning a \$10,000 grant for the invention which is patented for commercial sale.
- [Carboculture](#) has been verified by Puro.earth and has begun earning [carbon removal credits](#) for their biochar production. So far, they have sold all of their available credits to South Pole, a corporate climate solutions provider. Puro will be rolling out a new methodology in 2021 to allow a wide array of participants to trade [geological](#) Carbon Capture and Storage (CCS) credits.
- [Carbonfuture](#) has issued its first carbon sink credits for biochar produced in the U.S.
- The Environmental Defense Fund will be using a portion of their \$100 million Bezos Earth Fund grant to “build confidence in carbon credits by improving scientific understanding of the [storage and removal of carbon using nature-based processes](#) in forests, agricultural soils, and oceans.”
- NC State’s Department of Crop and Soil Sciences is planning on putting a portion of \$8 million in incoming gifts toward optimizing soil-biochar interactions for prolonged carbon storage in temperate soil environments by testing various [biochar processing methods](#).
- Currently in the U.S., small farms and intrepid individuals are seen as leading the [growth in agricultural biochar demand](#).

Europe

- Vow ASA, parent of IBI member company Scanship, is enlisting the help of the Bellona Foundation, an environmental NGO, to gain wider [access to feedstocks](#) to be carbonized.

China

- In addition to being a local agritourism destination, a pig farm in Zhejiang province sells 20,000 metric tons of [swine manure](#) biochar fertilizer per year.

News You Can Use

Start with “why?” when making company decisions. This captivating [video](#) called OurCarbon™ is probably the best short animation ever made about biochar. Thanks to Bioforcetech for illustrating their values in black and white.

A way to capture nutrients in runoff from farms, [bioreactors](#) that include biochar can be highly effective. Some instructive [examples](#) are installed in Maryland and Hawaii.

Got brush piles? A simple arrangement of sheet metal can compose a [large mobile kiln](#) called the Ring of Fire. A few hours of feeding will yield about 400 pounds of biochar. Five kilns and a small force of volunteers can produce a ton.

Calendar



COMPOST 2021 (USCC)

Jan 26 – 27, 2021

<https://compostconference.com/>



PYRO 2021

Apr 26 – 30, 2021 Ghent, Belgium 23rd
International Conference on Analytical
and Applied Pyrolysis.

<http://www.pyro2020.org/ehome/462106/941850/>



Biomass Conference & Expo

March 15 - 17, 2021

<http://www.biomassconference.com/>

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New Research

Here are some papers written by IBI members out of the roughly 235 articles included in the latest monthly lists 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 paint a much fuller picture than you get by just reading this newsletter. You can receive the full research paper list by e-mail every month by [joining IBI](#).

❖ Sugar Fix:

- 🔒 Lefebvre, D, A Williams, J Meersmans, GJD Kirk - Scientific Reports, (2020) "Modelling the Potential for **Soil Carbon Sequestration** Using Biochar from Sugarcane Residues in Brazil." Nature.Com. <https://www.nature.com/articles/s41598-020-76470-y>.

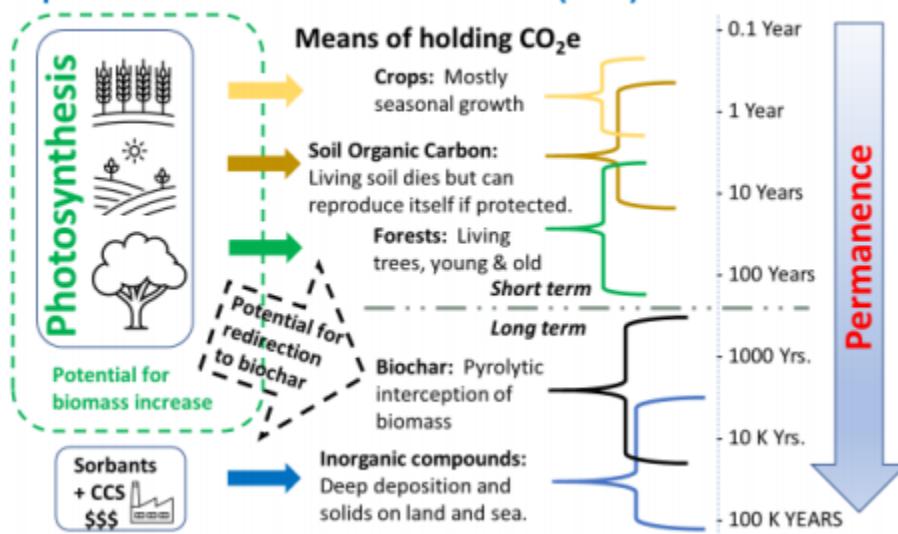
From the Abstract: "...a potential increase in soil C stocks by 2.35 ± 0.4 t C/(ha-year) in sugarcane fields across the State at application rates of 4.2 t biochar /(ha-year). Scaling to the total sugarcane area of the State, this would be 50 Mt of CO₂ equivalent/year, which is 31% of the CO₂ equivalent emissions attributed to the State in 2016."

❖ A One-two-three Punch:

- 🔒 Anderson, Paul, 2020. "**Climate Intervention** with Biochar: A White Paper about Biochar and Energy (BC&E) for Carbon Dioxide Removal (CDR) and Emission Reduction (ER)." Woodgas Pyrolytics, Inc. www.woodgas.energy. *Note: not peer-reviewed, therefore not in the monthly IBI list.*

From the Summary: "When used with BC&E technology, each tonne of dry biomass (such as seasoned wood or pellets from crop refuse) provides: 1. thermal energy that replaces two barrels of oil or 0.86 tonne of CO₂ that did not go into the air, and 2. solid carbon biochar equal to about 0.6 t CO₂ permanently removed from the atmosphere, and 3. co-benefits of a soil amendment that helps meet several Sustainable Development Goals (SDGs)."

Options for Carbon Dioxide Removal (CDR) with Permanence



❖ *Curtain Call:*

Sahoo, Kamalakanta, Amit Upadhyay, Troy Runge, Richard Bergman, Maureen Puettmann, and Edward Bilek. 2020. "Life-Cycle Assessment and Techno-Economic Analysis of Biochar Produced from Forest Residues Using Portable Systems." *The International Journal of Life Cycle Assessment*, November. <https://doi.org/10.1007/s11367-020-01830-9>.

From the Abstract: "Overall, the net GW impact of biochar produced from forest residues can reduce environmental impacts (i.e., 1–10 times lower CO₂eq emissions) compared with slash-pile burning. The minimal selling price (MSP) per tonne of biochar produced through biochar solutions incorporated (BSI), Oregon Kiln (OK), and air curtain burner (ACB) was \$3,000–\$5,000, \$1,600, and \$580 respectively considering 100 working days per year."

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: _____

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:

by email (bschorr@ttcorp.com), fax (1-202-223-5537), or U.S. mail

(1211 Connecticut Avenue, NW, Suite 650, Washington, DC 20036, USA).

Thank you for your support!