

MACCY BIOCHAR MEMBER BULLETIN

No. 17 - February 2021

Auspiced by the Macclesfield Community Association Inc.

Email: maccybiochar@adam.com.au

Website: www.maccybiochar.com

HELLO ALL.

Welcome to our 17th Member Bulletin.

BIOCHAR FOR BEGINNERS –

Hills Environment Centre, Norton Summit.

A very successful workshop was held at Norton Summit Hills Environment Centre on Saturday 20 Feb. Kindly coordinated by Centre Manager Val Hunt; presented by Maccy Biochar members Brian Lewis and John Agnew and attended by about 30 people all keen to learn about and use biochar. And to relax at lunchtime on the patio overlooking the City of Adelaide.



NEW MEMBERS

Welcome to new members Meg Byrt, Mary Grace and Margaret Ferris who attended the Norton Summit workshop and wish to learn more about biochar and keep up to date with the progress of biochar in helping to fight Climate Change. We also welcome new corporate member Littlewood Agapanthus Farm and owner John Koumi who is keen to learn more about biochar and make it on the farm.

ALL MEMBERS: BIOCHAR BONUS

The committee has decided to award a biochar bonus to all members out of the 2020 production surplus. The amount of the bonus this year is 20 litres per member. So please call me on 041 148 0935 or Kelvin Williams on 042 319 8345 to arrange collection from Macclesfield. Please bring your own buckets or shopping bags.



2021 – THE YEAR OF BIOCHAR



This February 2021 Newsletter from UK-based Pro-Natura reports enthusiastically on the merits of biochar. This well written article is worth reading so I have appended it in full to this Bulletin.

SA COMPANY SELLS BIOCHAR-BASED CARBON CREDITS TO MICROSOFT

This article from Microsoft is also worth reading: Microsoft carbon removal - Lessons from an early corporate purchase. Available at:

<https://query.prod.cms.rt.microsoft.com/cms/api/a/m/binary/RE4MDlc>

The SA company operates a plant at Tantanoola that converts green waste to bio-energy and biochar. It was one of 3 biochar projects selected by Microsoft worldwide. The other 2 were in Germany and Finland. Microsoft purchased 400 tonnes of carbon credits from the SA project (to be certified by third party Puro.earth).

PREMIER'S CLIMATE CHANGE COUNCIL 2020 SA CLIMATE LEADERS AWARDS

Brian and Kelvin attended the awards ceremony on behalf of Maccy Biochar and heard the Minister for the Environment, Hon David Spiers, speak about how the SA Government proposes to achieve carbon neutrality by 2050 and to halve 2005 greenhouse gas emissions by 2030 using a 3- pronged strategy based on electric vehicles, agriculture and blue carbon (seaweed) but waste management and community initiatives also playing a significant role. Unfortunately there seemed to be no thought of including biochar in any of these initiatives despite biochar being recognised by the IPCC as a negative emissions technology.



MOUNT BARKER
DISTRICT COUNCIL

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2021 PRODUCTION TARGET

We will not be resuming our biochar activities at Springhill vineyard this coming season as we will no longer have access to their waste vine-wood. So in order to meet our new production target of 36,000 litres we will need to concentrate production at Shadygrove Road and resume wood collection as before. So we may need more volunteers to help with production unless we spend less time wood collecting and/or convince more people to deliver their waste wood to us.

BLACK DIAMOND BIOCHAR

Kelvin and Fiona Williams recently launched their new Business “Black Diamond Biochar” to make enriched biochar for home gardeners and plant nurseries. Maccy Biochar wishes them every success with their venture which fits well with our policy to encourage local businesses to add value to our raw biochar. Black Diamond enriched biochar is available at Godings Farm Supplies in Macclesfield or on line at <https://blackdiamondbiochar.com.au>

As a result of this start-up Maccy Biochar has ceased production of its own enriched biochar as we prefer not to compete with local businesses.

NEWS FROM USA

Take a look at this new post based on work by researchers at the Washington State University evaluating the cost of biochar production compared to potential agricultural returns for a number of crops:

<http://csanr.wsu.edu/developing-biochar-markets-in-the.../>

WASTE MANAGEMENT PERSPECTIVE

This article by Mike Ritchie, an Australian waste management consultant expresses surprise that more is not being done to harness the natural power of photosynthesis to draw down carbon using biochar:

<https://wastemanagementreview.com.au/could-pyrolysis-save-th>

PRODUCT ANALYSIS

We have received the analysis of the sample of 2020 biochar that we sent to EAL and find that it compares favourably with the analysis of the 2019 sample. The comparison is shown below:

Production year:	2019	2020
Moisture	51%	53.20%
Total Carbon	79.40%	84.30%
Total Ash	12.18%	11.40%
Total remaining volatiles	8.42%	4.30%

The results from this analysis will be used to adjust our carbon capture results for 2020.

The ash composition is also comparable as shown below:

Ash Composition:	2019	2020
Plant nutrients	%kg	%kg
Calcium	1.83	3.96
Potassium	0.25	0.27
Magnesium	0.2	0.26
Sulphur	0.023	0.02
Phosphorus	0.069	0.11

Micro-nutrients	mg/kg	mg/kg
Boron	10.71	22.1
Zinc	30.21	40
Manganese	243.5	412
Iron	2370	2538
Copper	<10	10.9
Molybdenum	<10	<1
Nickel	<10	1.78
Contaminants	mg/kg	mg/kg
Aluminium	1120	1023
Sodium	716.87	
Silicon		1145
Cobalt		<1
Selenium	<10	<1
Cadmium	<10	<0.5
Lead	<10	<1
Arsenic	<10	<2
Chromium	<10	5.52
Mercury		<0.1

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REMAINING 2021 WORKSHOPS & COURSES

BIOCHAR FOR BEGINNERS - PART 1

Sat. 13 March:

Tues. 23 March:

Duck Flat Community Garden, 87 Wellington Road, Mount Barker (behind Mt. Barker District Hospital) from 10am to 12 noon.

Bookings: Mt. Barker Community Centre

<http://mtbcc.eventbrite.com/>

BIOCHAR FOR BEGINNERS – PART 2

Sat. 20 March:

Tuesday 30 March:

Duck Flat Community Garden, 87 Wellington Road, Mount Barker (behind Mt. Barker District Hospital) from 10am to 12 noon.

Bookings: Mt. Barker Community Centre

<http://mtbcc.eventbrite.com/>

BIOCHAR DEMONSTRATION WORKSHOP

Saturday 8 May 2021:

Normanville Natural Resource Centre, 3/50 Main Street, Normanville.

Bookings: Maddie Maguire

Tel: 8558 3644; Mob: 0418 828 517.

COMMITTEE MEMBERS at present are:

Brian Lewis – Chairman.

Kelvin Williams – Deputy Chair.

Fiona Williams – Membership Secretary.

Geoff Brockhouse – Wood collection Team Leader.

John Agnew – Schools Liaison.

Greg Marlu & Stephen Heading – Technical advisors.

Ivars Eglitis, Dean Hewlett and

Meegan Semple – Horticulture liaison.

Meetings are normally held on the 2nd Monday of the month (public holidays excepted) at 7:30 pm.

Members are welcome to attend.

FROM THE 2020 GALLERY



All eyes on the flames



Working in vineyard



Wood collection volunteers in action

*Making Maccy Carbon Neutral
Making Biochar for carbon capture and soil improvement*



Biochar & Carbon Credits

2021 — The year of biochar

Biochar

Biochar is a carbon-rich, charcoal-like powdery material. It is made from renewable biomass (e.g. unused agricultural or forestry residues) using a high-heat, low-oxygen burn process called pyrolysis. **Biochar offers compelling agronomic, climate, and environmental benefits:**

- It **dramatically improves soil fertility**. — Mixed with soil, biochar acts as catalyst for soil metabolism that improves nutrient and water retention capacity, mycorrhizal fungi development, and pH of acidic soils. Most importantly, it works as a one-off, permanent soil amendment that can dramatically increase agricultural yields, especially in degraded soils (from 20 to 200%).
- It **removes, for centuries, carbon from the atmosphere**. — The carbon captured by plants via photosynthesis is transformed with pyrolysis into a solid, stable form that won't return into the atmosphere, thus fighting global warming.
- It helps **avoid greenhouse gas emissions**. — When pelleted, biochar can be used as a sustainable alternative to charcoal made from deforestation wood, thus protecting biodiversity and the natural carbon sinks formed by forests.



These benefits and more, have been validated by over 20,000 published studies, including ones by prestigious international institutions like the Food and Agriculture Organisation (**FAO**), the Intergovernmental Panel on Climate Change (**IPCC**), and the United Nations Framework Convention on Climate Change (**UNFCCC**).

Until now, projects have almost exclusively been focused on the agronomic benefits of biochar given the absence of recognised methodologies to quantify biochar's climate impact, leading to either low-profitability projects or high selling prices for biochar. But recent evolutions in the voluntary carbon markets could make things change.

Voluntary carbon markets

Voluntary carbon markets allow private investors, governments and companies to offset their greenhouse gas emissions by financing climate-positive projects and receiving carbon credits in exchange. The largest category of buyers includes private companies driven by considerations such as safeguarding their reputation, ethics, and corporate social responsibility. These **markets are expected to grow 30+ times by 2030** given the massive recent pledges made by companies to become net-zero (i.e. reaching carbon neutrality) in the next decades.

Biochar for permanent carbon removal

In 2018 and 2019, the IPCC published two reports examining biochar's potential for permanent¹ carbon removal. It **estimated biochar's annual offset potential to 1–2 billion tonnes of CO₂** were it to be deployed at a massive, global scale. This definitive scientific recognition is therefore turning biochar into a credible means to mitigate our climate crisis.



In 2020, the first methodology for quantifying biochar-based carbon credits was created by Puro, the Scandinavian offset-trading platform. Some of these credits were notably **purchased by Microsoft**, who has pledged to offset by 2050 all greenhouse gases it has emitted since its creation. **Verra, the world's largest and most renowned carbon-credit certification body, will have its own methodology ready by autumn 2021.** This is the first time Verra is self-financing the development of a methodology, reflecting biochar's growing strategic importance. For now, **estimates range from 1.5 to 3 tonnes of CO₂ removed per tonne of biochar**, depending on the quantification assumptions and the feedstock used.

Carbon credits based on permanent carbon removal can be sold on the voluntary carbon market at a much higher price than average. Some biochar credits produced from forestry waste are **sold around 150 € / tonne of CO₂ removed**. This high price reflects how carbon-removal strategies have much more effective and quantifiable results fighting climate change than emission-avoidance solutions. Moreover, a growing number of scientists and climate initiatives are recommending permanent removal solutions as the only acceptable method for offsetting companies' unavoidable emissions — those that can't currently be reduced by switching to more sustainable production processes.

Biochar is uniquely positioned, as it is **"one of only a few [permanent carbon removal] technologies**, and the one at highest technology readiness level" (O. Mašek et al., *Nature*, 2019). Pro-Natura International has pioneered the use and development of biochar-production technologies, spending the past 20 years building and refining CarboChar, designed by Ing. Rachid Hadibi. It is a set of pyrolysis machines optimised for developing countries and producing 1 to 5 tonnes of biochar per day (depending on their size). **Pro-Natura was awarded Altran's 1st Prize of Technological Innovation** for the prototype that set the standard for the CarboChar technology.



CarboChar-1 is the smallest model of the biochar production machines developed by Pro-Natura

This convergence of **high-quality methodologies, massive incoming demand** for removal credits (with major corporations leading the way), and **high market prices** for such credits make the future of biochar projects very bright.

For small-scale, non-industrial biochar projects, where it is difficult to apply the stringent methodologies mentioned above, the International Biochar Initiative (IBI) is considering working on a simplified methodology that would allow small projects to also benefit from the additional revenues from carbon credits. IBI is the leading platform for fostering stakeholder collaboration, good industry practices, and environmental and ethical standards to support biochar systems.

¹ Removal is considered permanent when carbon will remain out of the atmosphere for at least hundreds of years.

Biochar for avoided emissions

Biochar is not limited to agriculture. It can also be used as a sustainable fuel to replace charcoal made from deforestation wood in developing countries. This **green charcoal not only avoids emissions from burning a non-renewable fuel, but also avoids the large quantities of methane (CH₄) emissions** generated by the artisanal production of charcoal. CH₄ is a greenhouse gas with a global warming potential roughly 35 times greater than CO₂ (considering a 100-year timeframe), making it particularly harmful.



Green charcoal briquettes

Charcoal use in developing countries, and especially in Africa, is a major source of deforestation. When considering the avoided-deforestation and methane-avoidance effects, we estimate (based on a UNFCCC methodology) that **1 tonne of green charcoal is equivalent to 4 tonnes of avoided CO₂**.

Avoidance carbon credits can also be sold on the voluntary carbon market. Their value is lesser than the one of removal credits, but the co-benefits associated to it (protecting biodiversity and offering a high-quality, fume-free, sustainable fuel to local populations) make them worth more than the average emission-avoidance credits.

Biochar's time has finally arrived!

Pro-Natura International UK • 29 Downside Crescent, London NW3 2AN
E-mail: guy.reinaud@pronatura.org

