

MACCY BIOCHAR

December 2019

Auspiced by the Macclesfield Community Association Inc.

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WHAT IS MACCY BIOCHAR ABOUT?

Maccybiochar is all about:

- fighting climate change by reducing atmospheric carbon dioxide
- making Macclesfield carbon neutral and
- improving local soils.

Carbon is captured (temporarily) by all plants by the process of photosynthesis.



The carbon dioxide (CO₂) in the air is split into carbon and oxygen. The carbon goes into building the wood. And the oxygen is emitted for us to breathe. However sooner or later plants give back carbon to the atmosphere (eg. when they are burned and when they die and rot); whereas biochar is stable and lasts for thousands of years in the soil (as proved by the Terra Preta soils of South America).

SO WHAT IS BIOCHAR?

Physically biochar is the same as charcoal made from wood. But unlike charcoal biochar is not used as a fuel. If it was we would simply be recombining the carbon with oxygen to make carbon dioxide again.

But like most charcoal, biochar is made from biomass eg tree litter. Here is a typical wood pile on a local farm.



HOW IS IT MADE?

Biochar is made by cooking dry wood with little or no air (so-called pyrolysis) at high temperature (400-600°C).



There are many different ways to do this. Some are high tech, some low tech. We use a low-tech method using flame-capped kilns.



During pyrolysis the combustible gases (methane, carbon monoxide and hydrogen) emitted are burned **cleanly with no smoke** at high temperature (eg 2000 degrees C). This leaves behind a char consisting only of carbon, ash (the mineral content) and some residual volatiles. When the kiln is full the contents are thoroughly quenched with water. Here is the finished char after quenching.



Biochar is approx. 75% carbon depending on the type of wood that is pyrolysed. (Hardwood is best).

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And here is the finished char after bagging.

HOW DOES BIOCHAR REDUCE GREENHOUSE GASES?

Each Carbon molecule captured has diverted one molecule of CO₂ from the atmosphere. Because of the atomic structure of CO₂ this means that each mass unit of Carbon captured has diverted just over 3½ mass units of CO₂.

(Atomic weights: C =12; O =16; So CO₂ = 44; So 12 units of C divert 44 units of CO₂. So 1 unit of C diverts 3.66 units of CO₂.)

So 1 tonne of carbon diverts 3.66 tonnes of CO₂.

And because we can easily measure the carbon content of the biochar (75 – 80%) then we can calculate how much CO₂ each tonne of biochar has diverted from the atmosphere. **Typically 1 tonne of biochar diverts 2½ tonnes of CO₂.**

HOW DOES THIS HELP MAKE MACCY CARBON NEUTRAL?

If we know how much electricity a household has purchased from the grid then we can calculate how much CO₂ they have effectively generated. Then we can allocate some of the CO₂ we have diverted to that household to help them become carbon neutral.

HOW DOES BIOCHAR HELP THE SOIL?

Biochar holds about 3 times its own weight of water. So when mixed into the soil in small proportions (1-5%) moisture and nutrients are held and encourage growth of microfungi and other living organisms. This helps to improve plant yields; reduce water consumption; and reduce the need for inorganic fertilisers.

OTHER BENEFITS OF BIOCHAR

Biochar has become very prominent in recent years; the advantage of its production is widely recognised as a way to capture carbon (as mentioned previously); and the end product is quickly becoming accepted as having many environmental benefits, including pasture improvement in agriculture, feed supplement in livestock; which will also help to reduce the greenhouse gas emissions from meat production; soil improvement for home and commercial gardeners; water filtering; and as an odour absorbing product both for domestic and commercial composting.

WHAT HAVE WE DONE SO FAR?

A steering committee was formed at a public meeting in January this year to drive the project in Macclesfield. The committee has:

- undertaken extensive community consultation;
- made a presentation to the Mount Barker Council;
- held an Open Day to demonstrate the operation of the kilns;
- obtained an interim collection & operating site;
- made 1720 litres of biochar resulting in a net capture of 1.38 tonnes of CO₂;
- set up a website at www.maccybiochar.com;
- exhibited our product at the Macclesfield Strawberry Fete;
- produced our first cubic metre of biochar for sale.



Here is Greg Marlu at our 2019 Open Day firing up the first of 2 kilns.

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Our first bulk bag of biochar for sale.

- We have also received a \$2000 Community Grant to assist us in purchasing a larger kiln, and have placed an Order with a local fabricator to do that.

Below is a summary of our modest, but significant, achievement over our first season:

SCOREBOARD		
DATE	15/11/2019	Units
BIOCHAR PRODUCED	1720	Litres
CARBON CAPTURED	389	Kg
NET CO2 CAPTURED	1387	Kg
TOTAL KWHR OFFSET	2719	KWHr



Our stall at the Strawberry Fete.

WHAT DO WE WANT?

We want to encourage the local community and others in nearby towns to bring their tree litter to us so that we can keep making biochar and create more carbon offsets.

We want to keep accurate and credible records that will enable Macclesfield to be recognised as carbon neutral.

We want to support the District Council of Mount Barker in its endeavours to achieve carbon neutrality.

We want to co-operate with local landcare and bushcare groups on their tree planting programs and in assisting landowners to capture carbon with biochar.

We want to establish a credible reputation as a supplier of bulk biochar for agricultural and industrial applications.

We want this project to inspire others to do likewise and start a nation-wide effort to fight climate change with local action.

We also want to help politicians to better understand what they can do to fight climate change. Eg. Enact legislation to enforce transparency of CO₂ emissions by towns, regions etc.

BIOCHAR INDUSTRY EVENTS

Two well-attended local events on biochar showed that smart businesses are well aware of the advantages that can be gained from using biochar in agriculture and viticulture.

BIOCHAR - SMART AGRICULTURE - WORKSHOP:

On 29 August 2019 three of our members attended this workshop at Hindmarsh Valley Hall, Hindmarsh Tiers Road. 10 am to 3pm. This workshop was supported by Dairy Industry Fund; Australia & New Zealand Biochar Initiative; and Climate & Agricultural Support Pty Ltd. It featured presentations by Professor Stephen Joseph and Melissa Rebbeck.

TEMPLE BRUER WINERY CONFERENCE

On 8 October 2019 Temple Bruer winery at Milang organised a gathering of Langhorne Creek

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

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viticulturalists to demonstrate and explain the production and application of biochar in vineyards. Barrie Williams, the senior viticulturalist at Temple Bruer explained that they decided to use biochar, not just because it sequesters carbon, but because it enhances the flavour and the quality of their wines. The group were able to witness biochar being made and the method of application to the soil was explained.

WHAT ARE WE PLANNING FOR 2020?

Our main objective for 2020 is to ramp up our production to at least 27 cubic metres during the May to November season. In order to achieve this we will need at least 20 additional volunteers working at least two days per month on either wood collection or kiln operation. If you are physically able and would like to enjoy a day in Macclesfield twice a month for 6 months (May to Nov) either:

- Call Brian on 041 148 0935; or
- Register with Volunteers SA & NT and check out our volunteer position vacancies.

Other objectives include:

- Complete our strategic business plan;
- Raise further funds to allow us to purchase a trailer and equip it with a liquid FBC and mobile kiln so that we can go out to local properties and make biochar on-site from landowners' "burn heaps";
- Grow our membership so that we reach and involve more people in our town and region;
- Obtain certification of our biochar for use as an organic product;
- Obtain distributors throughout the Adelaide Hills;
- Enlist local households to register with us to have our biochar carbon offsets cancel their GHG emissions.

HOW CAN YOU HELP?

Become a member! Join the Group to stay informed about progress and help us fund this worthwhile initiative. Membership forms available from website or call Brian on 041 148 0935.

Enlist as a Volunteer.

Advertise your biochar products on our website.

Help with Training courses and Demonstration Days!

Register as a household supplier of woody waste. Free for all Macclesfield households and those with a Macclesfield PO box address. Only modest fees apply for other households.

Engage us to make biochar on your property.

Encourage friends to follow our progress.

Forward this brochure to friends and colleagues.

Contact us to receive future brochures and newsletters if you did not receive this one from us.

Become a Maccy Biochar distributor.



Here is one of our members making biochar.

ABOUT US

Maccybiochar is a community-based, non-profit, group set up to help make Macclesfield carbon neutral and is run entirely by volunteers. Our primary activity is the production of biochar from woody tree litter sourced from local households, businesses and landowners. The carbon credits created by making biochar are used to offset the greenhouse gas emissions of local households. The biochar we make on behalf of our customers is sold in bulk for local agricultural and other uses (except those that could lead to combustion of the char and hence negate the carbon offset we have gained). We are based in Macclesfield, South Australia.

OUR COMMITTEE:

Brian Lewis - Chairman

Kelvin Williams, Kath Thurmer, Greg Marlu, Stephen Heading, Tess Minett (Ward Councillor), Ivars Eglitis, Geoff Brockhouse and Meegan Semple.

CONTACT DETAILS:

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