

# MACCY BIOCHAR

September 2019

Auspiced by the Macclesfield Community Association Inc.

Email: [maccybiochar@adam.com.au](mailto:maccybiochar@adam.com.au)

Website: [www.maccybiochar.com](http://www.maccybiochar.com)

## 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 (CO<sub>2</sub>) 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).

# MACCY BIOCHAR

September 2019



And here is the finished char after bagging.

## HOW DOES BIOCHAR REDUCE GREENHOUSE GASES?

Each Carbon molecule captured has diverted one molecule of CO<sub>2</sub> from the atmosphere. Because of the atomic structure of CO<sub>2</sub> this means that each mass unit of Carbon captured has diverted just over 3½ mass units of CO<sub>2</sub>.

(Atomic weights: C =12; O =16; So CO<sub>2</sub> = 44; So 12 units of C divert 44 units of CO<sub>2</sub>. So 1 unit of C diverts 3.66 units of CO<sub>2</sub>.)

**So 1 tonne of carbon diverts 3.66 tonnes of CO<sub>2</sub>.**

And because we can easily measure the carbon content of the biochar (75 – 80%) then we can calculate how much CO<sub>2</sub> each tonne of biochar has diverted from the atmosphere. **Typically 1 tonne of biochar diverts 2½ tonnes of CO<sub>2</sub>.**

## 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 CO<sub>2</sub> they have effectively generated. Then we can allocate some of the CO<sub>2</sub> 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 area for household deliveries;
- made our first two batches of biochar;
- and set up a new website.



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

# MACCY BIOCHAR

September 2019

## WHAT DO WE WANT?

We want to encourage the local community and others in nearby towns to use our facilities 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 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 CO<sub>2</sub> emissions by towns, regions etc.

## OTHER BIOCHAR ACTIVITIES IN OUR REGION

### BIOCHAR - SMART AGRICULTURE - WORKSHOP:

29 August 2019 at Hindmarsh Valley Hall, Hindmarsh Tiers Road. 10 am to 3pm.

Supported by Dairy Industry Fund; Australia & New Zealand Biochar Initiative; and Climate & Agricultural Support Pty Ltd.

Featured presentations by Professor Stephen Joseph and Melisa Rebbeck.

### AUSTRALIA NEW ZEALAND BIOCHAR INITIATIVE

Go to [www.anzbi.org](http://www.anzbi.org) to find out more.

### ANZBI CONFERENCE – 20 -26 OCTOBER 2019.

Go to <https://anzbc.org.au> to find out more.

This conference will include presentations in the South East of SA.

## ABOUT US

Maccybiochar is a community-based, non-profit, group set up to help make Macclesfield carbon neutral. Our primary activity is the production of biochar from woody waste sourced from local households and businesses. 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 may be used by them for any purpose **other than** combustion or that may ultimately lead to combustion. 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.

## HOW CAN YOU HELP?

**Become a member!** Join the Group to stay informed about progress.

**Enlist** as a Volunteer.

**Advertise** your biochar products or activities 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 for your use.

**Encourage** friends to follow our progress.

**Forward** this brochure to others who may be interested.

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

**Contact** us to tell us what you think of this initiative.

## CONTACT DETAILS:

Email: [maccybiochar@adam.com.au](mailto:maccybiochar@adam.com.au)

Website: <https://www.maccybiochar.com>

Facebook: [www.facebook.com/maccybiochar](http://www.facebook.com/maccybiochar)

Membership Fees:

Individual \$20 pa; Corporate \$100 pa.

