Biochar Basics

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‘*Biochars’* are highly carbonaceous residues formed from the thermal treatment of biomass in limited to zero oxygen conditions, created for the sole purpose of improving soil productivity.

Biochar properties

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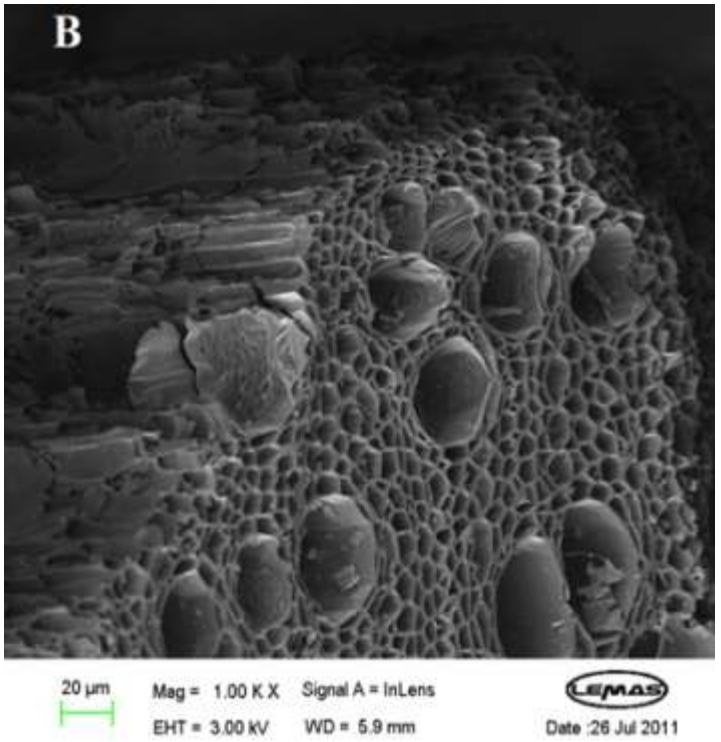
A good quality biochar must possess:

- High surface area
- Good pore size distribution
- High cation exchange capacity
- High pH
- High carbon content



Biochar production

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Biochar production

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Biochar production

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Biochar production

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Biochar properties

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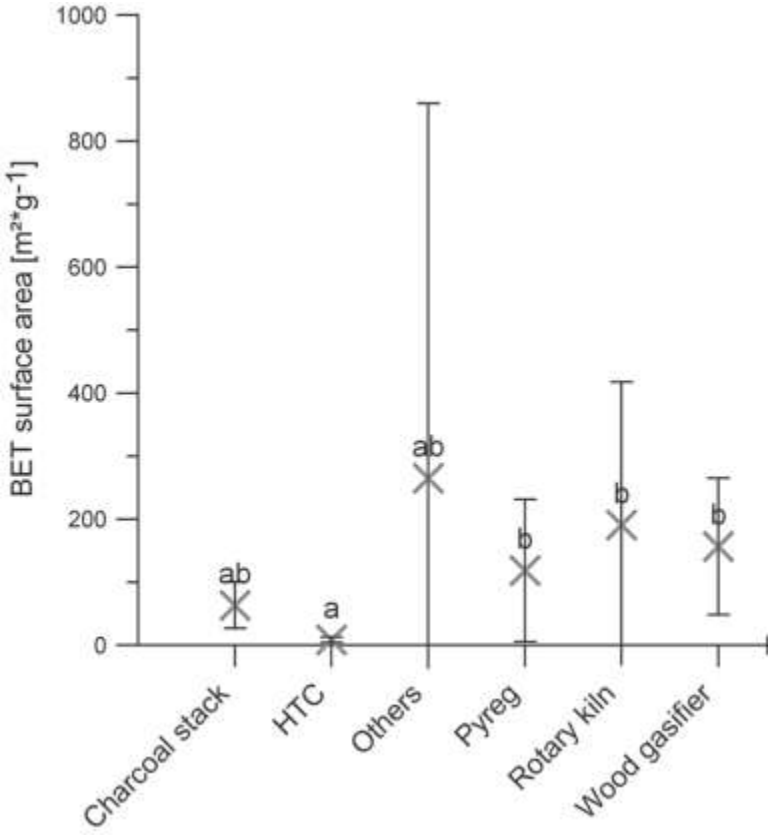

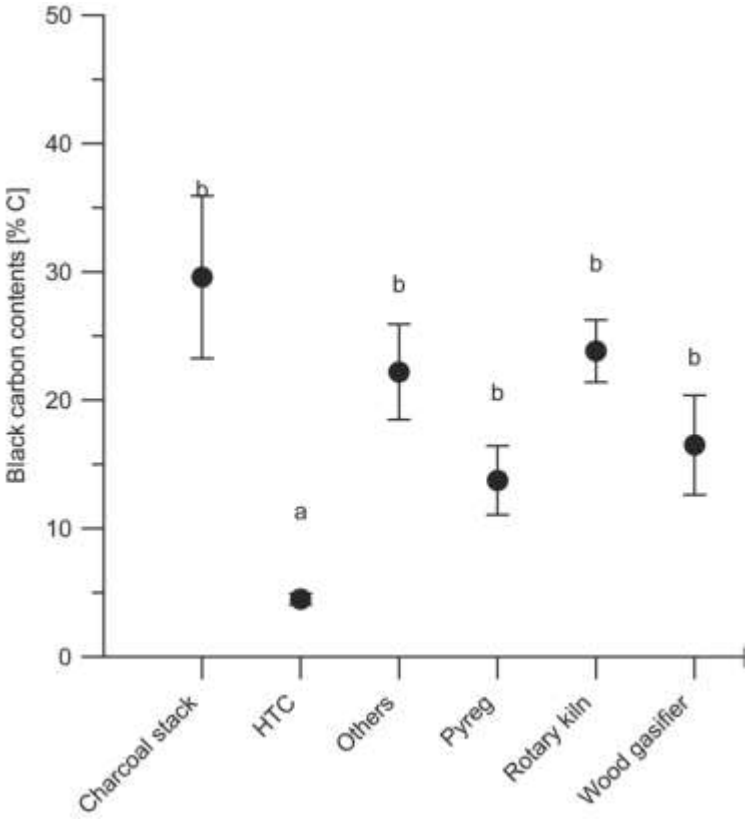

Sonja Schimmelpfennig* and Bruno Glaser, (2012) One Step Forward toward Characterization: Some Important Material Properties to Distinguish Biochars, Journal of Environmental Quality

Biochar analysis

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Agronomical Properties
Ultimate analysis
Proximate analysis
Total N,P,K,Ca,Mg
Porosity
EC
WEOC, WEON
pH
CEC
Water holding capacity
Heavy metals
PAH
Dioxin
PCB
Surface analysis of char
SEM

BET-surface area

ASE

GC-MS

Ultimate analysis

Proximate analysis

Cation-Exchange Capacity (CEC)

Microwave acid digestion

ICP-MS

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www.Fertiplus.eu

Reducing mineral fertilisers and agro-chemicals by recycling treated organic waste as compost and bio-char

The project FERTIPLUS is co-funded by the European Commission, Directorate General for Research & Innovation, within the 7th Framework Programme of RTD, Theme 2 - Biotechnologies, Agriculture & Food.

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FERTIPLUS will take up the challenge to identify innovative processing technologies and strategies to convert urban and farm organic waste to valuable and safe products for agriculture and allow industries to develop projects and provide adequate information on use and quality of the products

Biomass feedstocks

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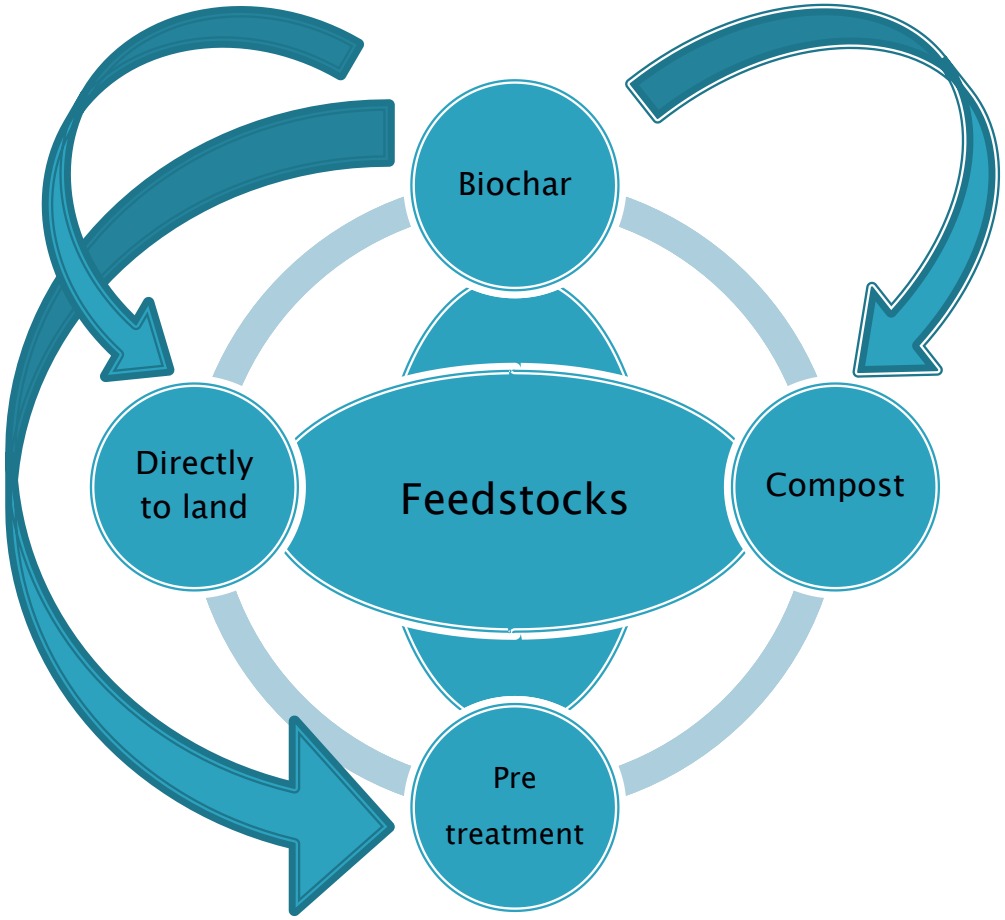

Feedstocks

1. For making biochar
2. For making Compost
3. Bio-solids applied directly

Aims

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Assess potential for reducing mineral fertiliser use

Assess the potential for recuperating nutrients

Assess the potential for reducing GHG emissions

Ensure practice is safe!

Approach

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To identify and characterise waste feedstocks with potential for recycling

- Identify
- Source
- Characterise

To identify suitable routes for pre-treatment (AD, homogenisation, composting)

Approach

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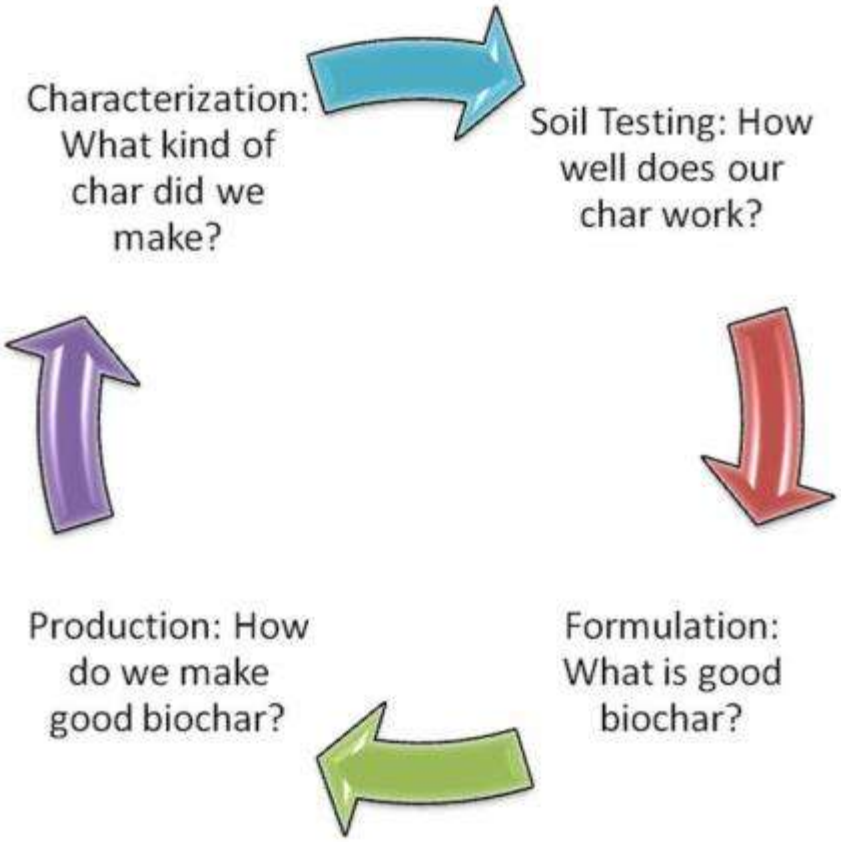
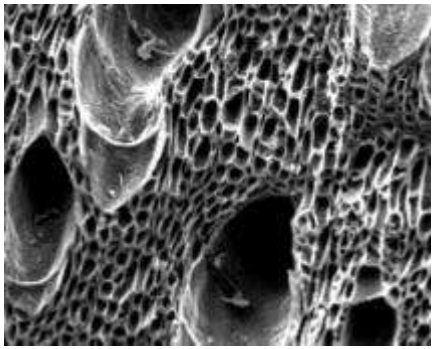
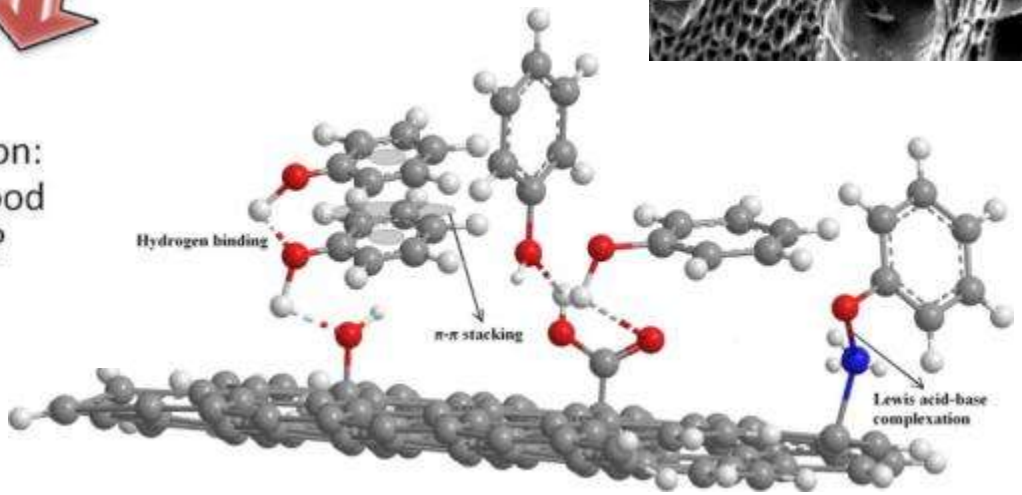


Biochar production and characterisation





Approach

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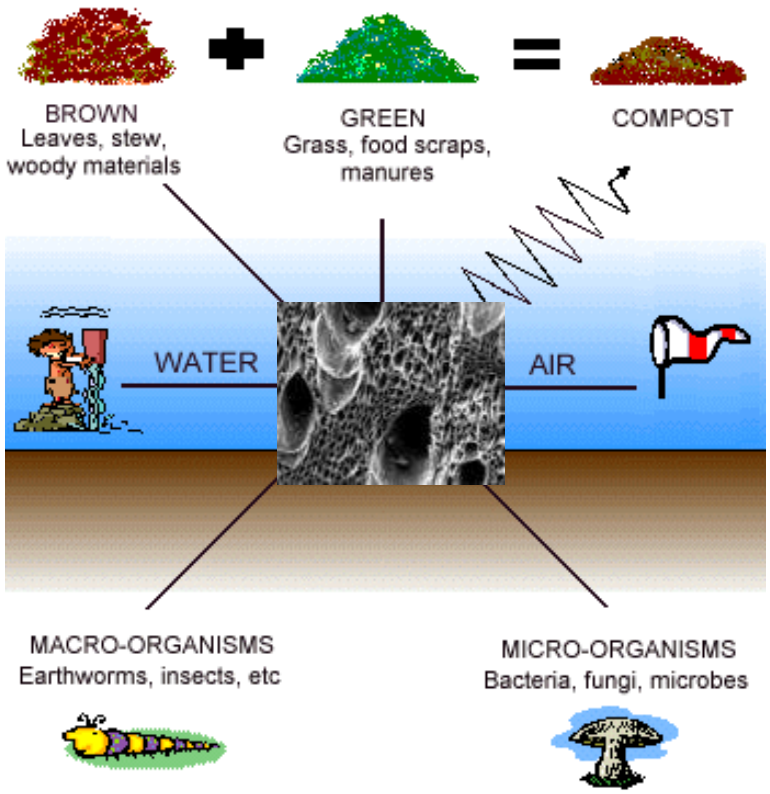

- Influence of biochar on composting ?
- Application point ?
- Feedstock suitable for composting ?
- Feedstock suitable for biochar ?

Field trials (Belgium)

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Local Biochar Initiative

How can we use biochar in an urban environment?

How can we ensure it is used and produced safely?

What are the potential impacts?