

# Should I char it?

A brief presentation on biochar for C management

Dr. Thea Whitman

Associate Professor, Department of Soil Science, University of  
Wisconsin-Madison

**Atmosphere  
800 Gt**

120 +3  
Photosynthesis

60

Plant  
respiration

9  
Fossil fuels,  
cement, and  
land-use  
change

60

Net terrestrial  
uptake  
3

PyOM

**Soil C  
2300 Gt**

Microbial  
respiration and  
decomposition

**Fossil C  
10,00 Gt**

(DOE 2008; Units are Gt C)

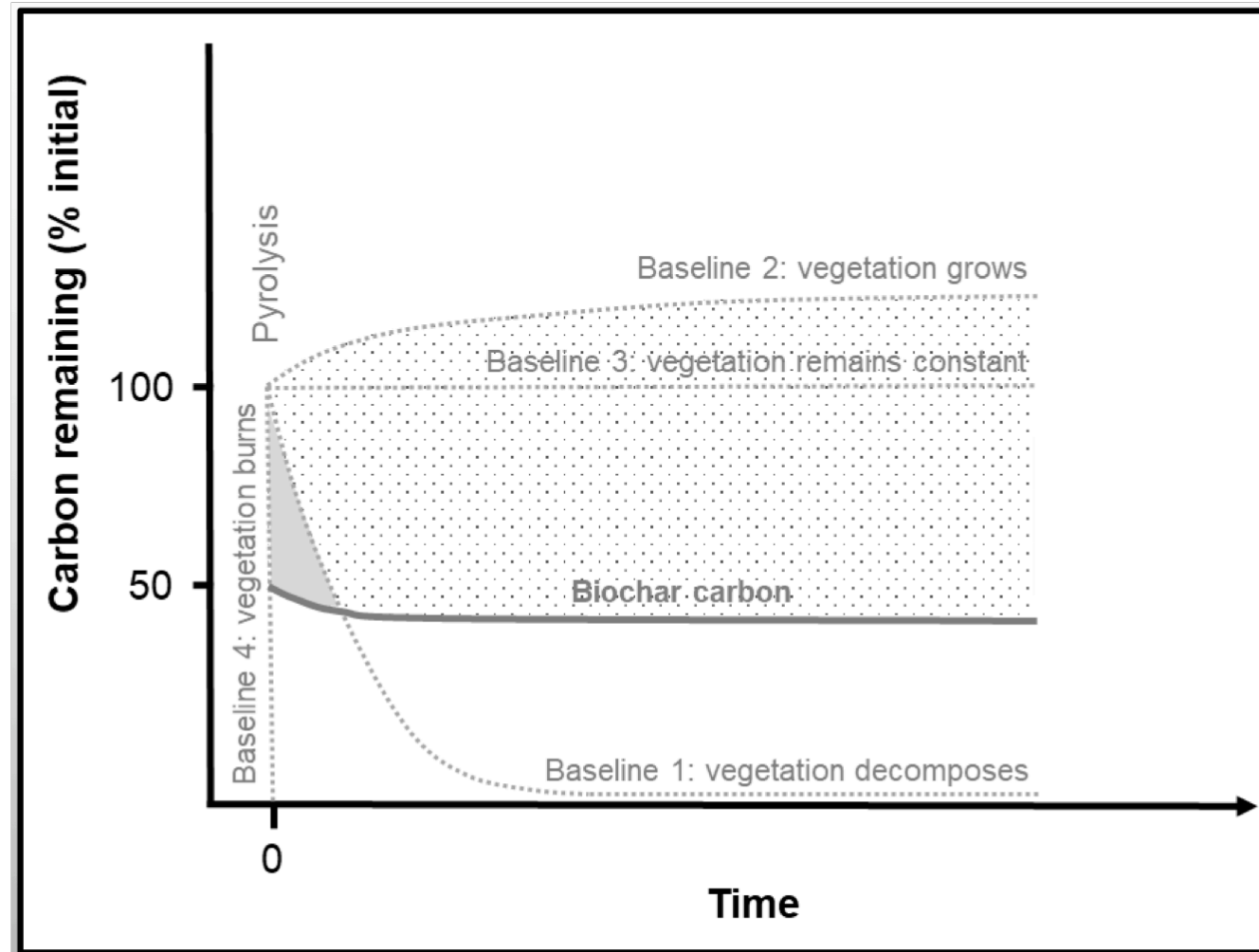
# What are PyOM and biochar?



## Pyrogenic organic matter

- Incomplete combustion of biomass under low  $O_2$ : Pyrolysis
- “Biochar”: PyOM produced intentionally for agricultural amendment or C management

# Biochar systems can produce net C drawdown... if designed correctly

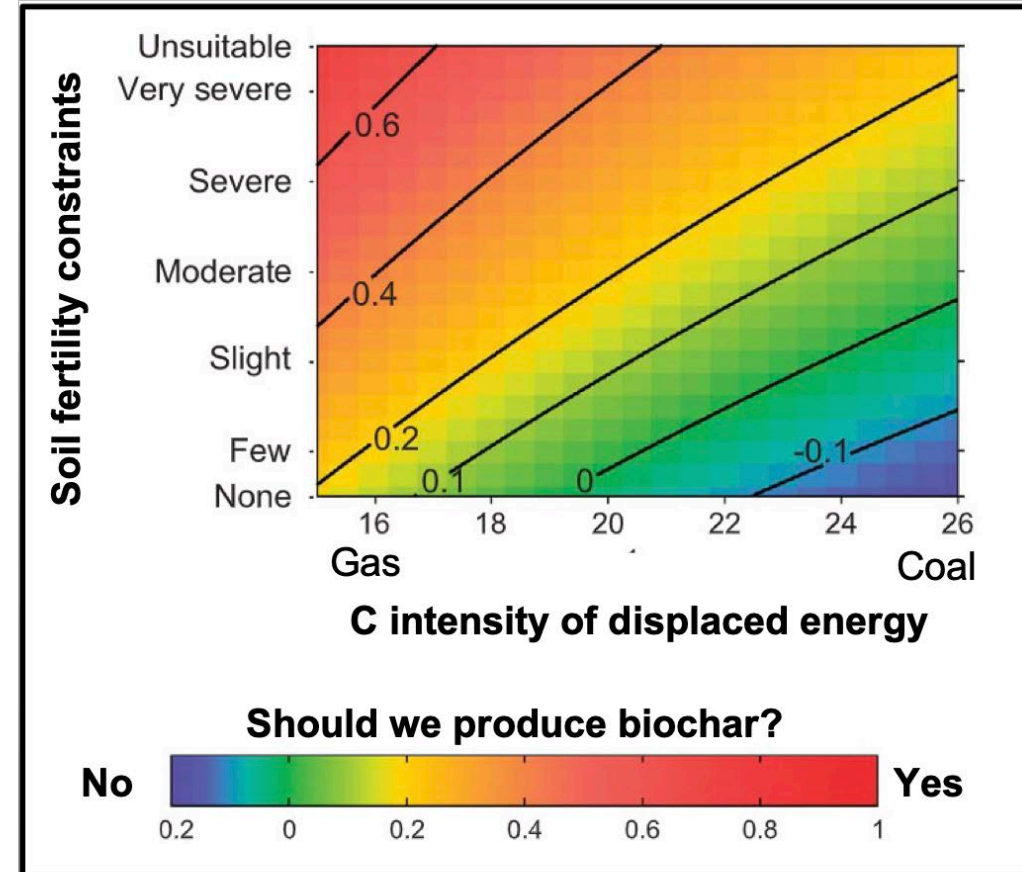


(Lehmann *et al.*, 2022)

# Should I char it?

## *Biochar vs. bioenergy*

- Capture energy during biochar production
- What is the C intensity of the energy that is displaced?
  - Best when displaced energy source is not C-intensive
- Is there an effect on soil fertility?
  - Best for low-fertility soils
- What effects are there on non-pyrogenic SOC?
  - Increased mineralization in the short term often offset by decreases in the longer term



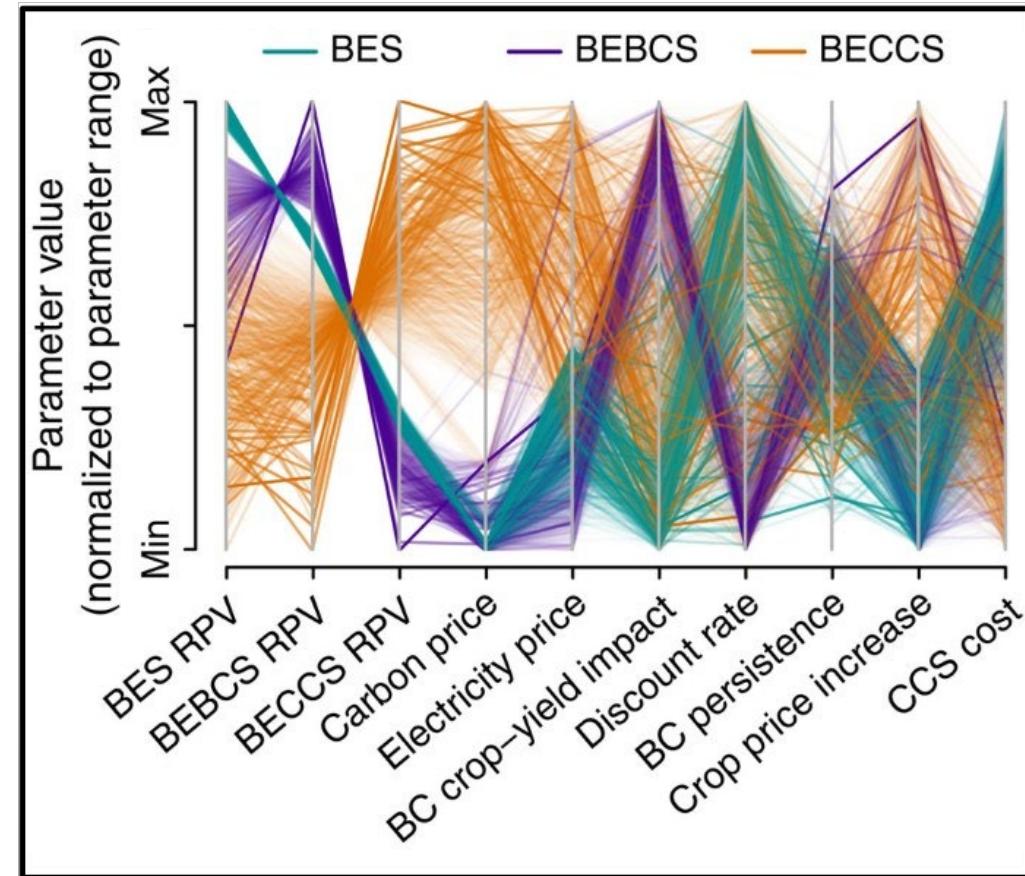
(Modified from Woolf *et al.*, 2010)



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(Woolf et al., 2016)