

*Garden Planet Biochar*

bio- active soil enhancer

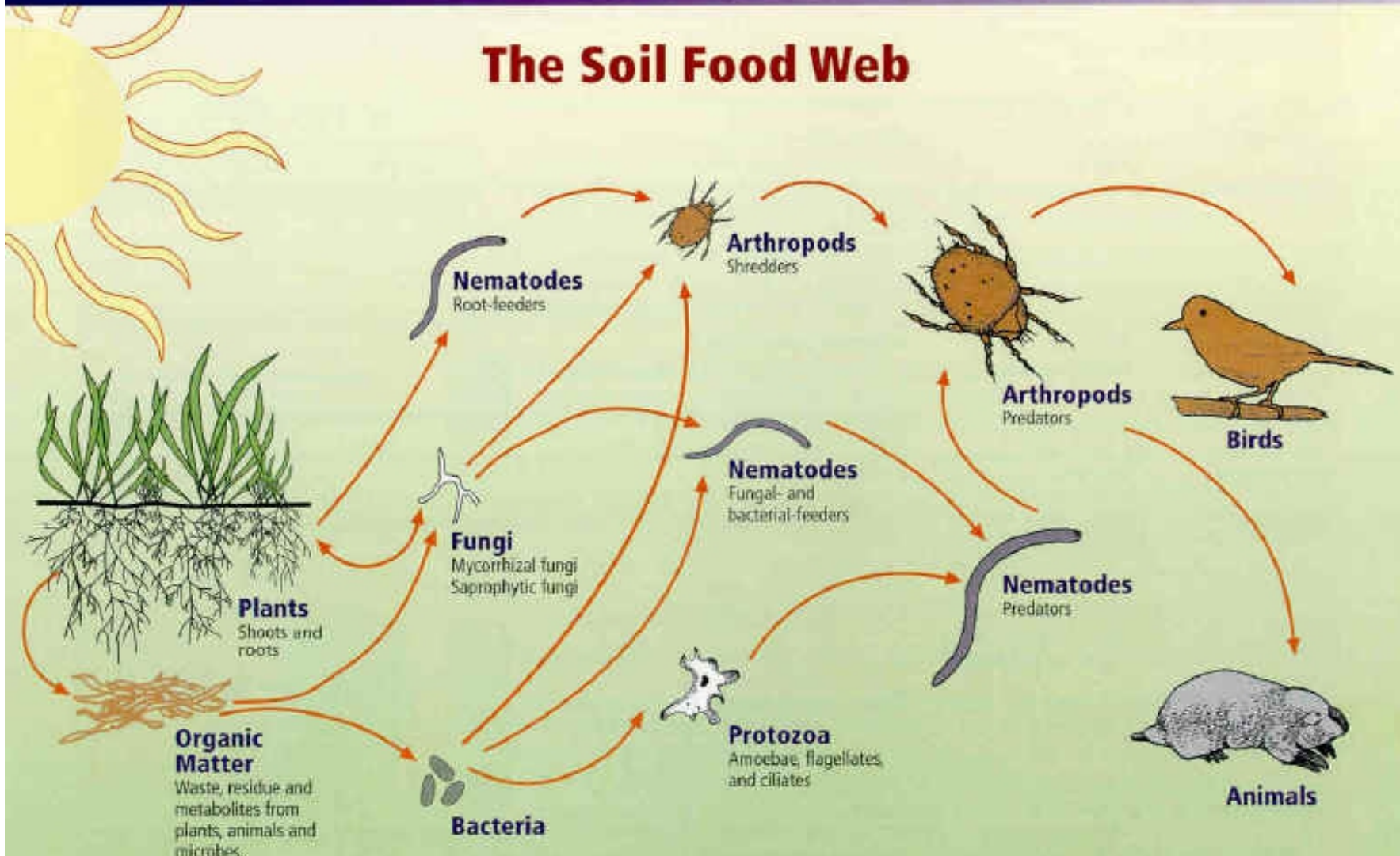
# Biochar

- This could be a key stone technology in the fight against climate change
- It offers food security, stable soils
- Needs to be made accessible to all people





# The Soil Food Web



**First trophic level:**  
Photosynthesizers

**Second trophic level:**  
Decomposers  
Mutualists  
Pathogens, parasites  
Root-feeders

**Third trophic level:**  
Shredders  
Predators  
Grazers

**Fourth trophic level:**  
Higher level predators

**Fifth and higher trophic levels:**  
Higher level predators



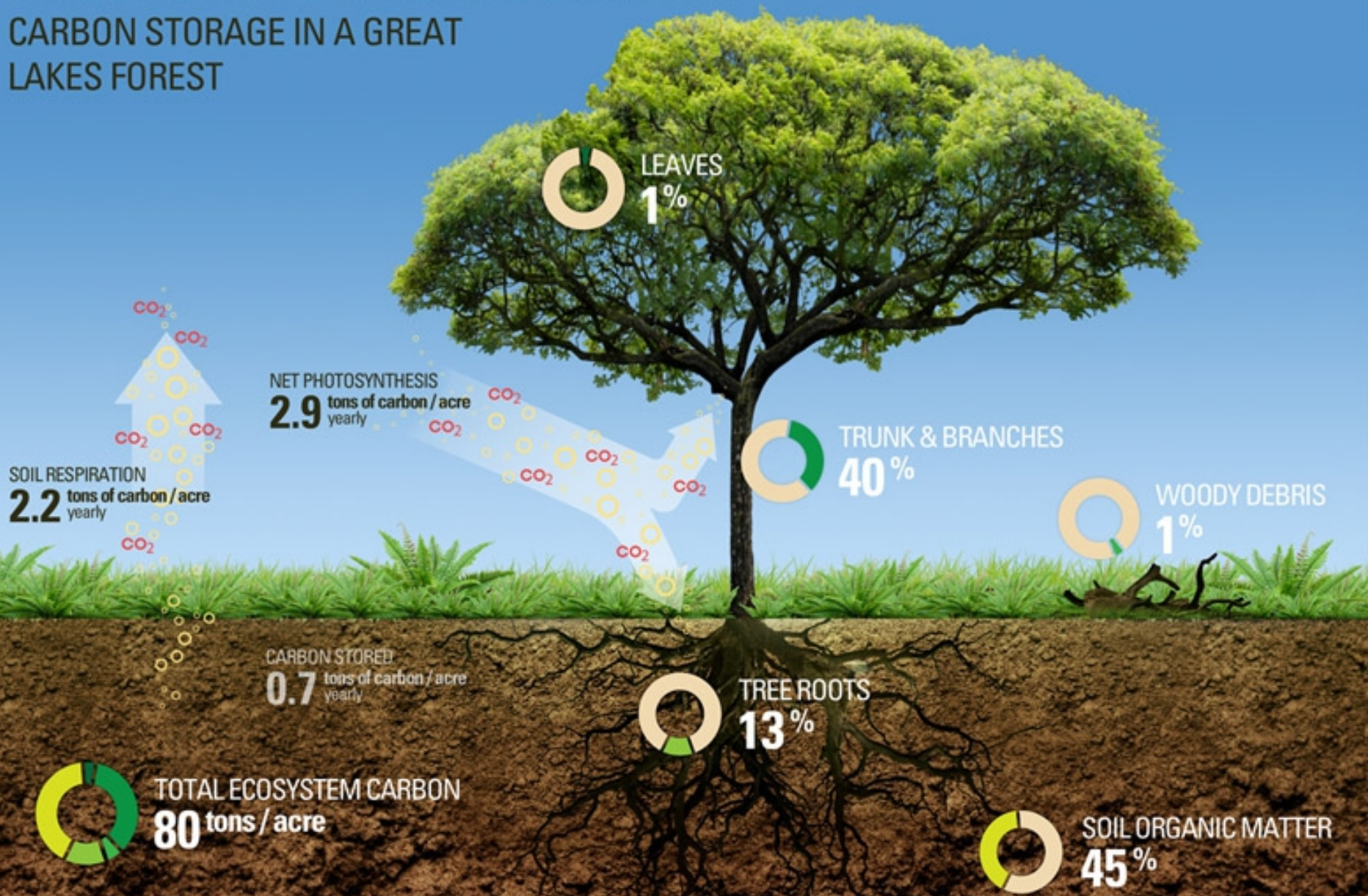






# WHERE DOES CARBON GO?

## CARBON STORAGE IN A GREAT LAKES FOREST





**Carbon  
Farming**

**Conventional  
Farming**









550—TREE BEGAN GROWING

570—MOHAMMED BORN

640—ALEXANDRIAN LIBRARY BURNED

732—SARACENS DEFEATED AT TOURS

800—CHARLEMAGNE CROWNED

896—ALFRED THE GREAT FRAMES LAWS

1000—LEIF ERICSON LANDS ON AMERICAN COAST

1066—BATTLE OF HASTINGS

1147—THE SECOND CRUSADE

1215—MAGNA CARTA SIGNED

1302—MARINER'S COMPASS IN EUROPE

1429—JOAN OF ARC

1492—AMERICA DISCOVERED

1588—SPANISH ARMADA DESTROYED

1620—LANDING OF PILGRIMS

1750—FRANKLIN'S DISCOVERIES IN ELECTRICITY

1776—DECLARATION OF INDEPENDENCE

1815—BATTLE OF WATERLOO

1861—CIVIL WAR

1891—TREE CUT DOWN

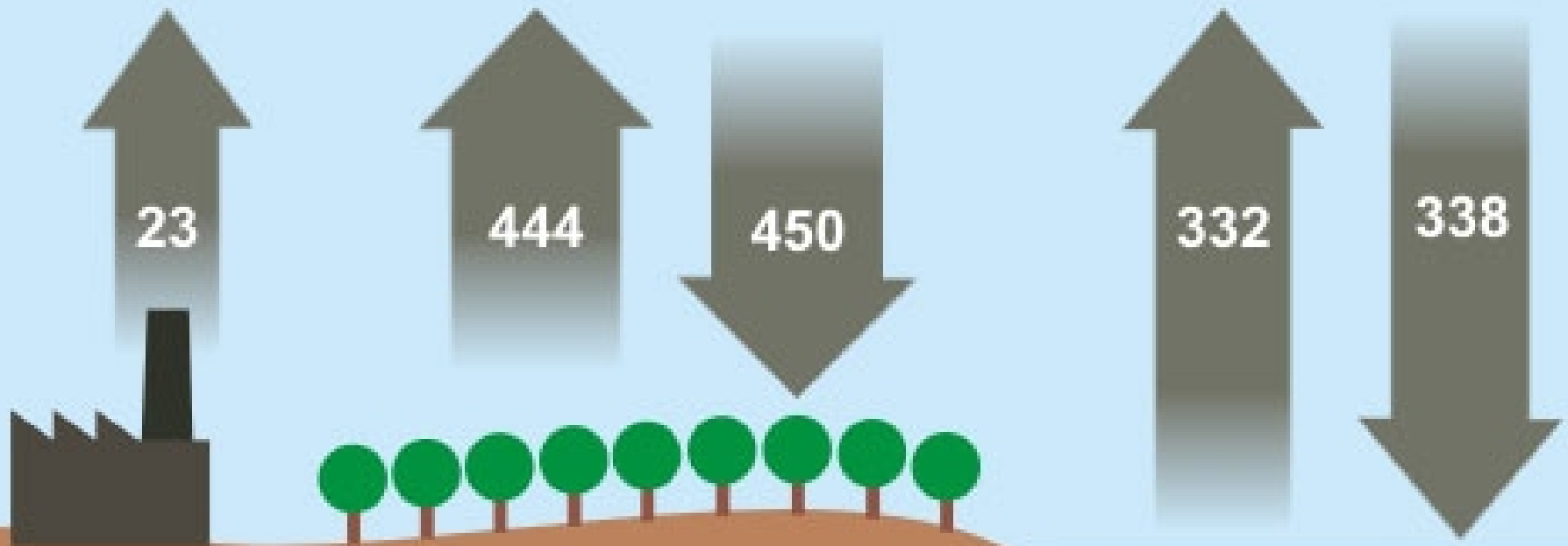


# The complete picture of the carbon cycle

Fossil Fuel  
Burning

Vegetation  
& Land

Ocean



*Carbon cycle for the 1990s. Numbers are in billion tonnes of CO2 (IPCC AR4).*



The  
**Biochar  
Solution**

CARBON FARMING AND CLIMATE CHANGE



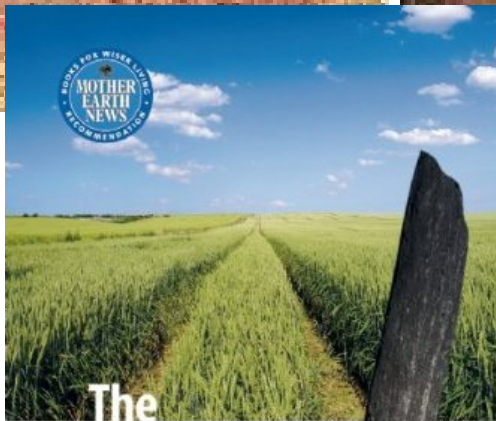
**ALBERT BATES**

# Astonishing break through - Major rethink

- Large parts of Amazon rainforest is maybe only 500 years old
- Could be said to be man made
- Stable fertile black soils... rich in carbon
- Maybe the most sophisticated farmers ever
- Could be the most important breakthrough empowering all people to make a change



# Terra preta



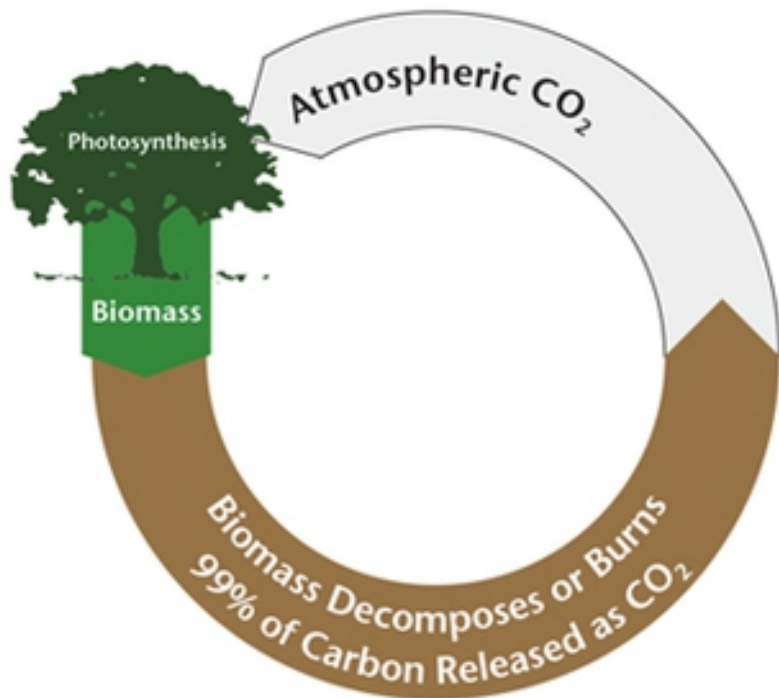
## The Biochar Solution

CARBON FARMING AND CLIMATE CHANGE

ALBERT BATES



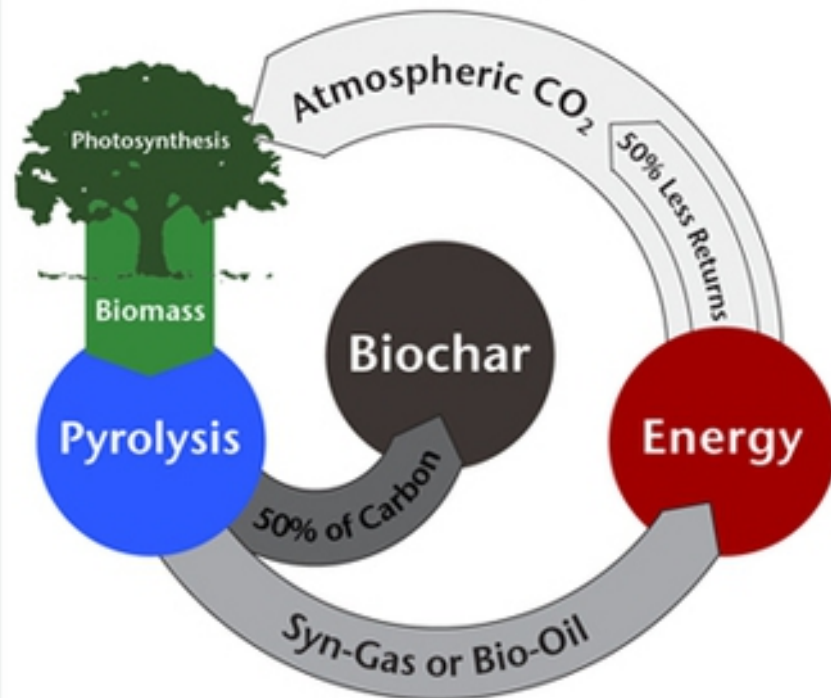
## The Carbon Cycle



Almost all of the carbon returns to the air

Green plants remove CO<sub>2</sub> from the atmosphere via photosynthesis and convert it into biomass. Virtually all of that carbon is returned to the atmosphere when plants die and decay, or immediately if the biomass is burned as a renewable substitute for fossil fuels.

## The Biochar Cycle



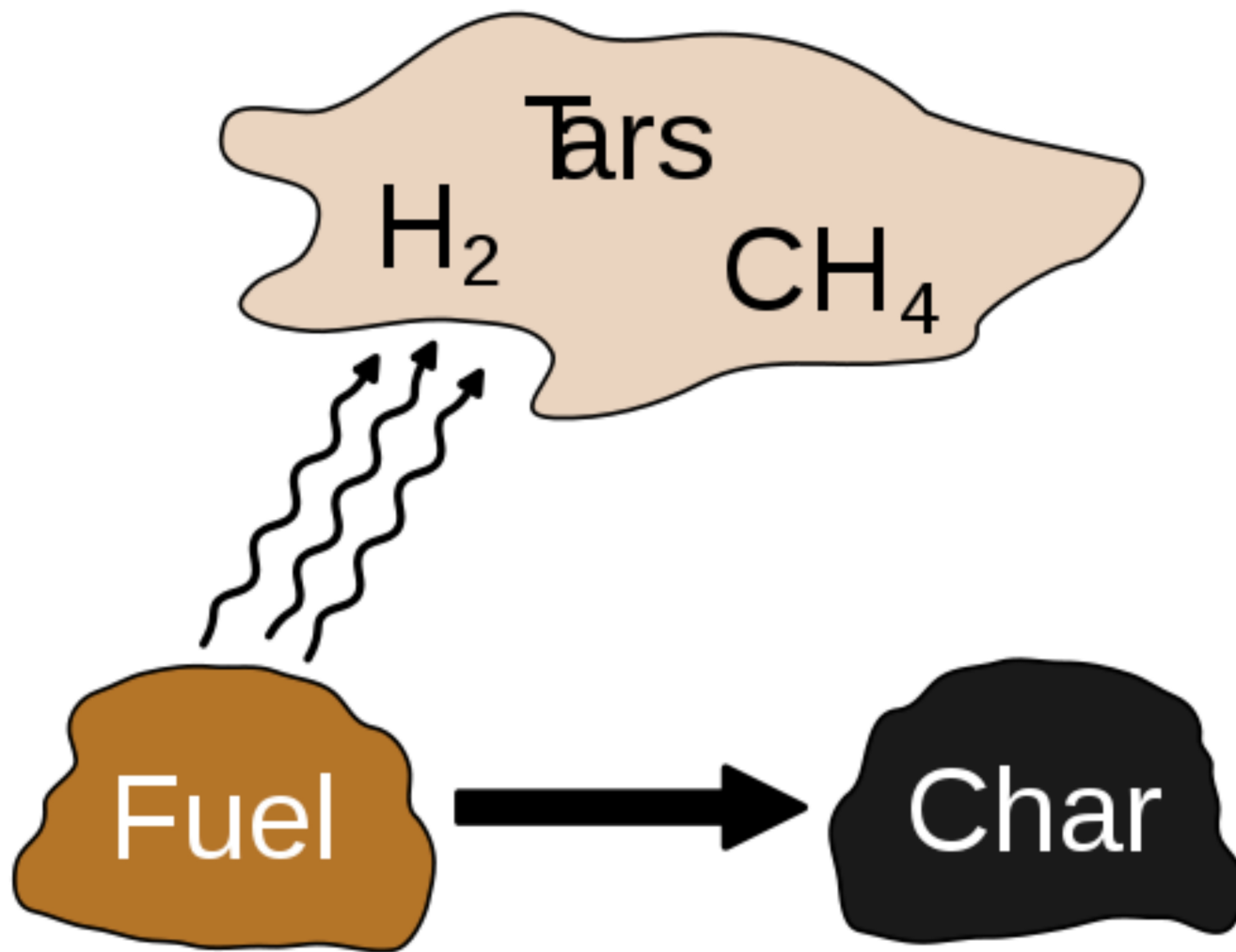
Up to half of the carbon is sequestered

Green plants remove CO<sub>2</sub> from the atmosphere via photosynthesis and convert it into biomass. Up to half of that carbon is removed and sequestered as biochar, while the other half is converted to renewable energy co-products before being returned to the atmosphere.









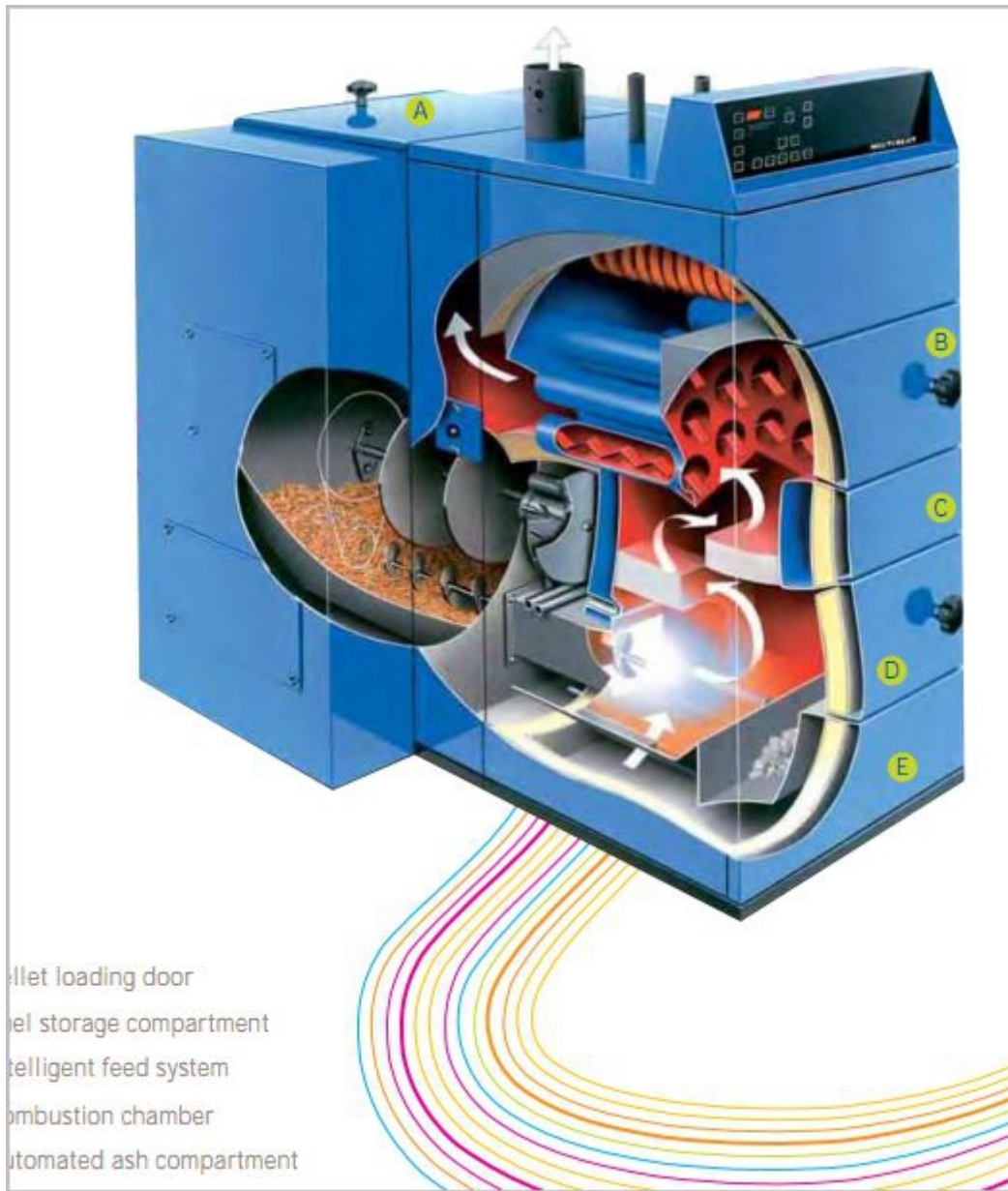




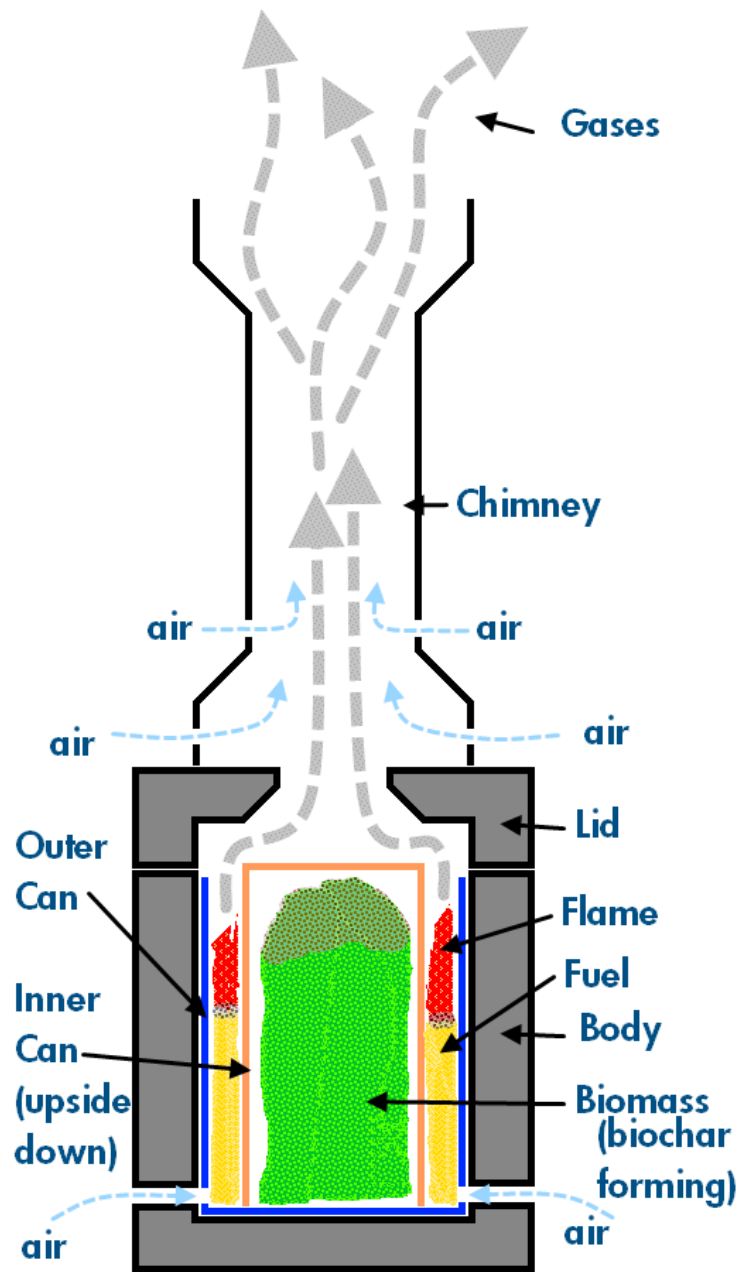






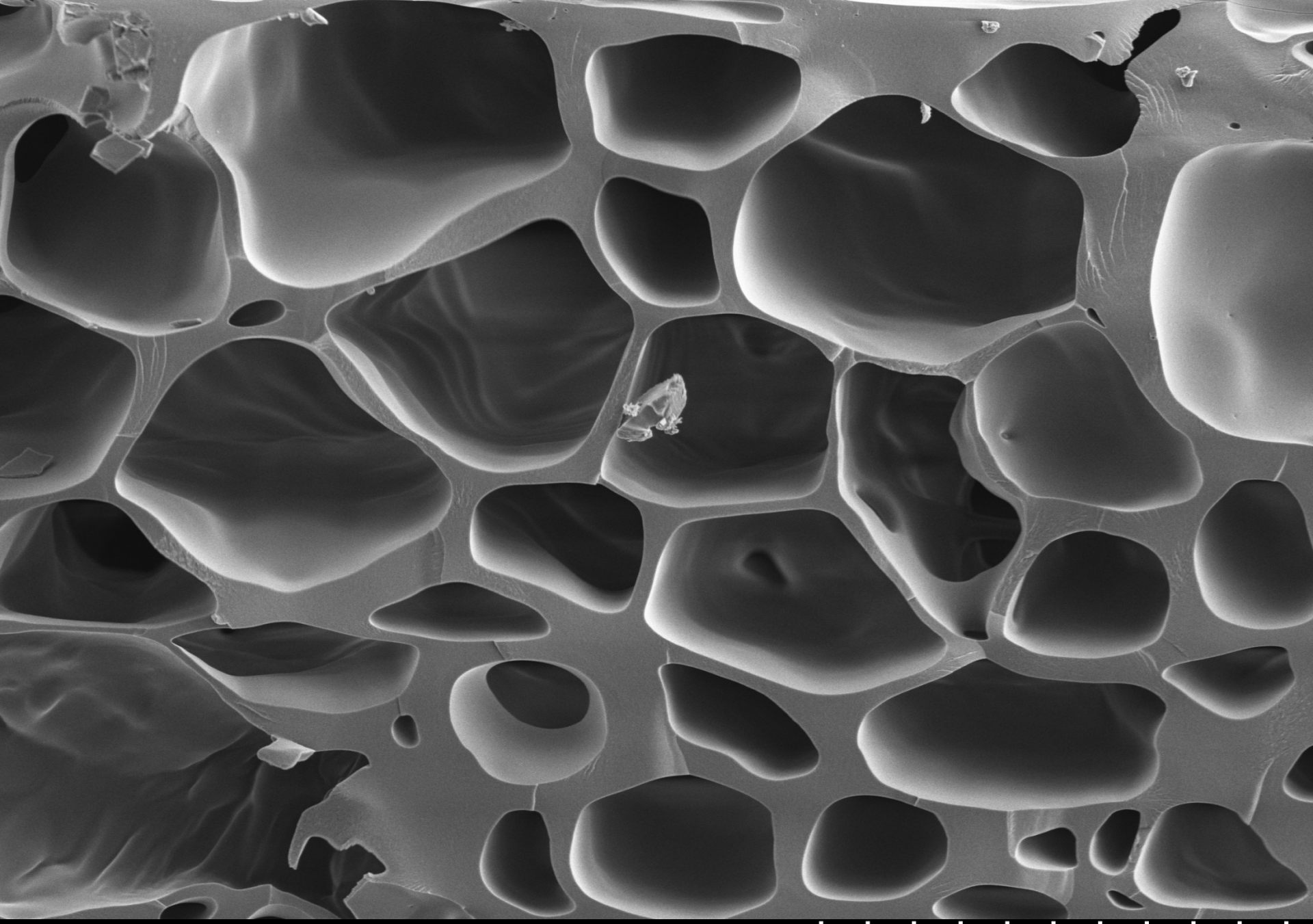


pellet loading door  
pellet storage compartment  
intelligent feed system  
combustion chamber  
automated ash compartment



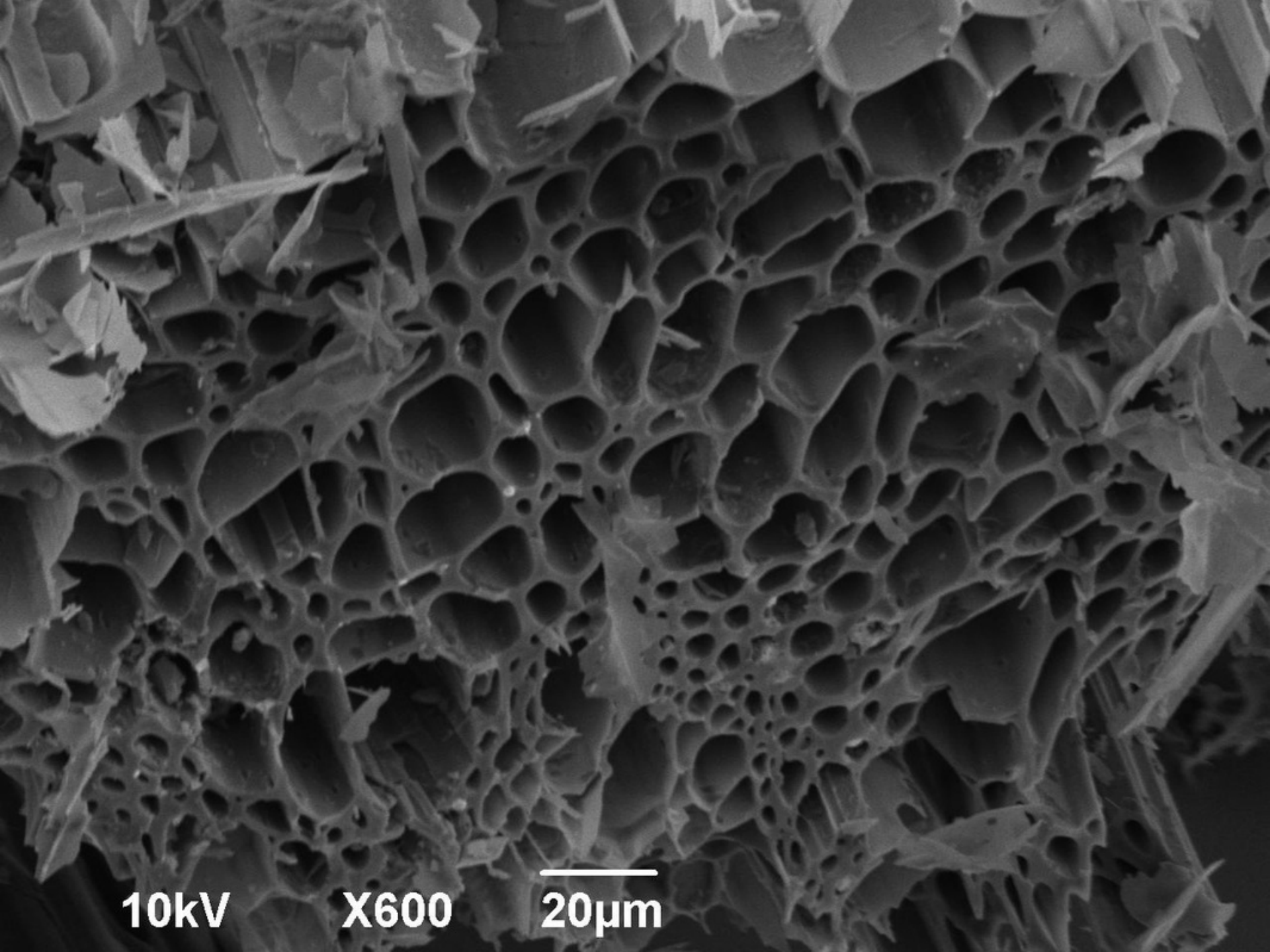
**Retort Diagram**





UTAS\_SU70 3.0kV x1.50k SE(M)

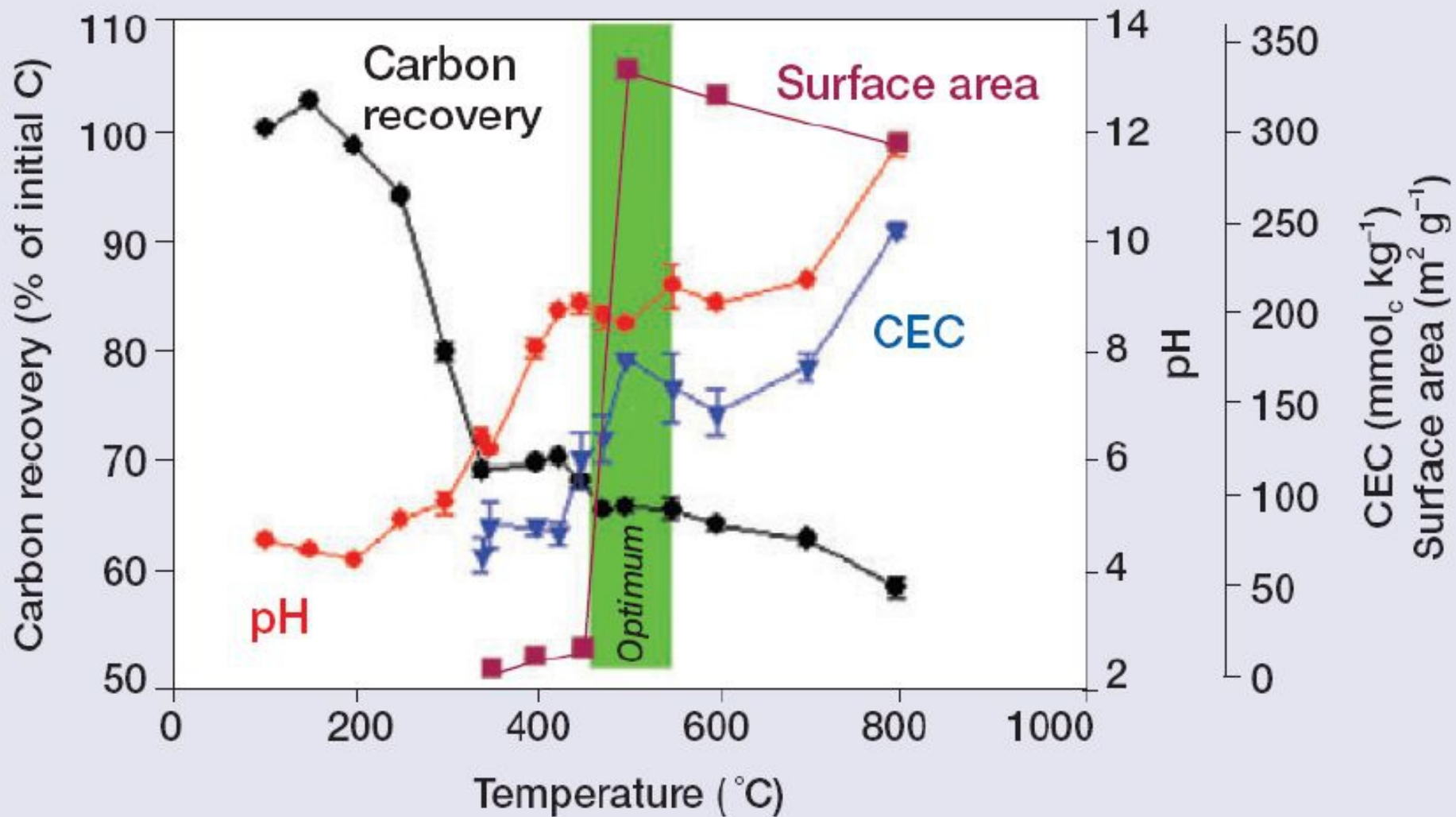
30.0um



10kV

X600

20μm























Grass Biochar made in a TLUD Stove



Grass biochar from a crushed tablet



Mulch hay tablet




Grass Biochar



Structure survives





Biochar

Control

14.08.2012

**Grape tomatoes  
with Biochar.  
Yield 13, 1/3  
larger in size.**

**Grape tomatoes  
no Biochar.  
Yield 7**



# Grass trials





Lettuce biomass increased by  
as much as 75%



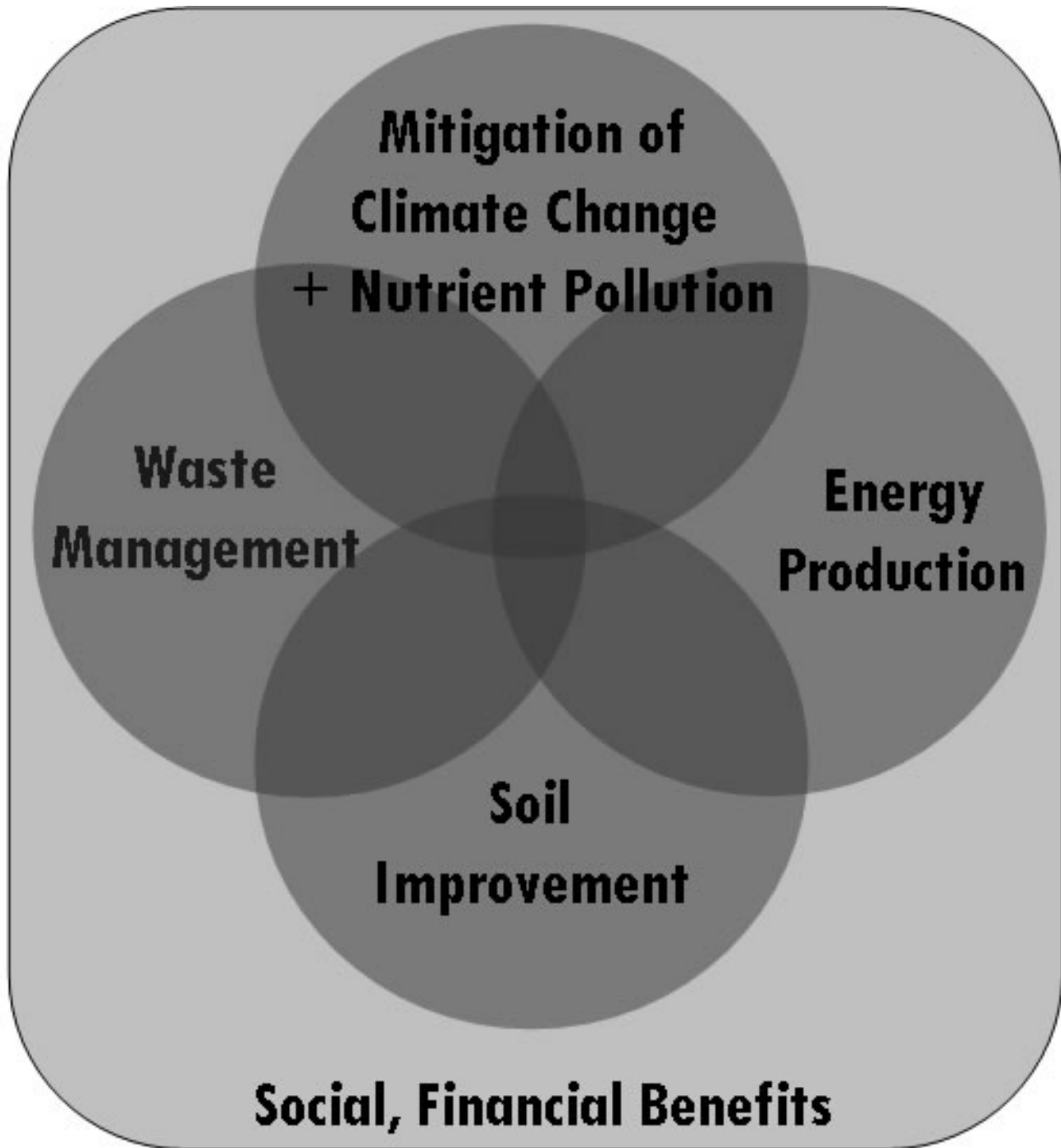
# Bio active

- Soil reef
- Biological factory

# Increases crop yields!

- Increases water retention
- Increases nutrient availability
- Increases micro biotic activity
- Healthier, more disease resistant plants
- Can increase yields by as much as 75%





# Our Unique qualities

- Clean burn
- Small batches
- Quality product
- Mobile production
- Community benefit
- Our own inoculant
- Ethical and sustainable

# Who are we?

- Small family farmers
- Teachers and educators
- Community growers
- Mid Wales
- Committed to organic principles and working for a social benefit

# Social benefit

- Work with community garden projects
- Turn 'waste products' into valuable resource
- Supports local food growing
- Small scale localised production
- Educational workshops and demonstrations



# Our business

- We have bookings for demonstrations and teaching
- Potential to locate our business on a new community owned farm in North wales
- Access to materials
- Unlimited potential!

# The ask

- Get us out of our shed!
- We need to get mobile
- Marketing resources
- Product, packaging, distribution
- Hone our production techniques
- Be ready for the big opportunities awaiting us and our product

contains: coir, charcoal, bio-innoculant  
Batch #33 Use by Dec 2016

2.5KG

# Garden Planet Biochar



Retains nutrients  
Holds moisture  
Feeds soil microbes

**Bio-active  
Soil enhancer**

Simply add to your  
growing bed  
at 1KG p sq m

Produced in Wales



This container is an upcycled sheep feed box