

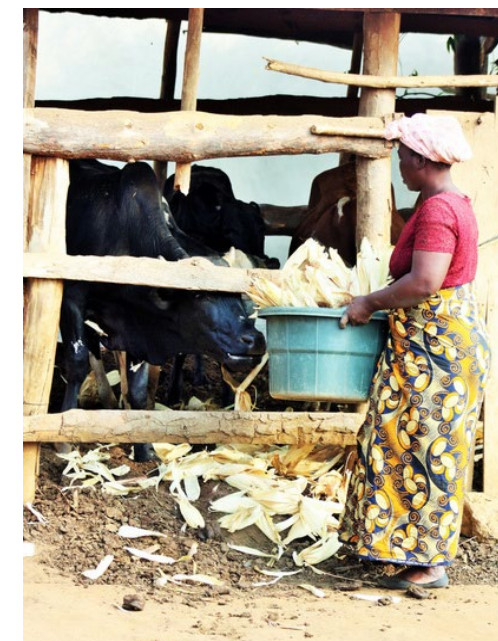
Smallholders, Biochar and Food Security in Southern Africa

Tom Miles

Ethos 2025

Kirkland, WA

January 24-26, 2025

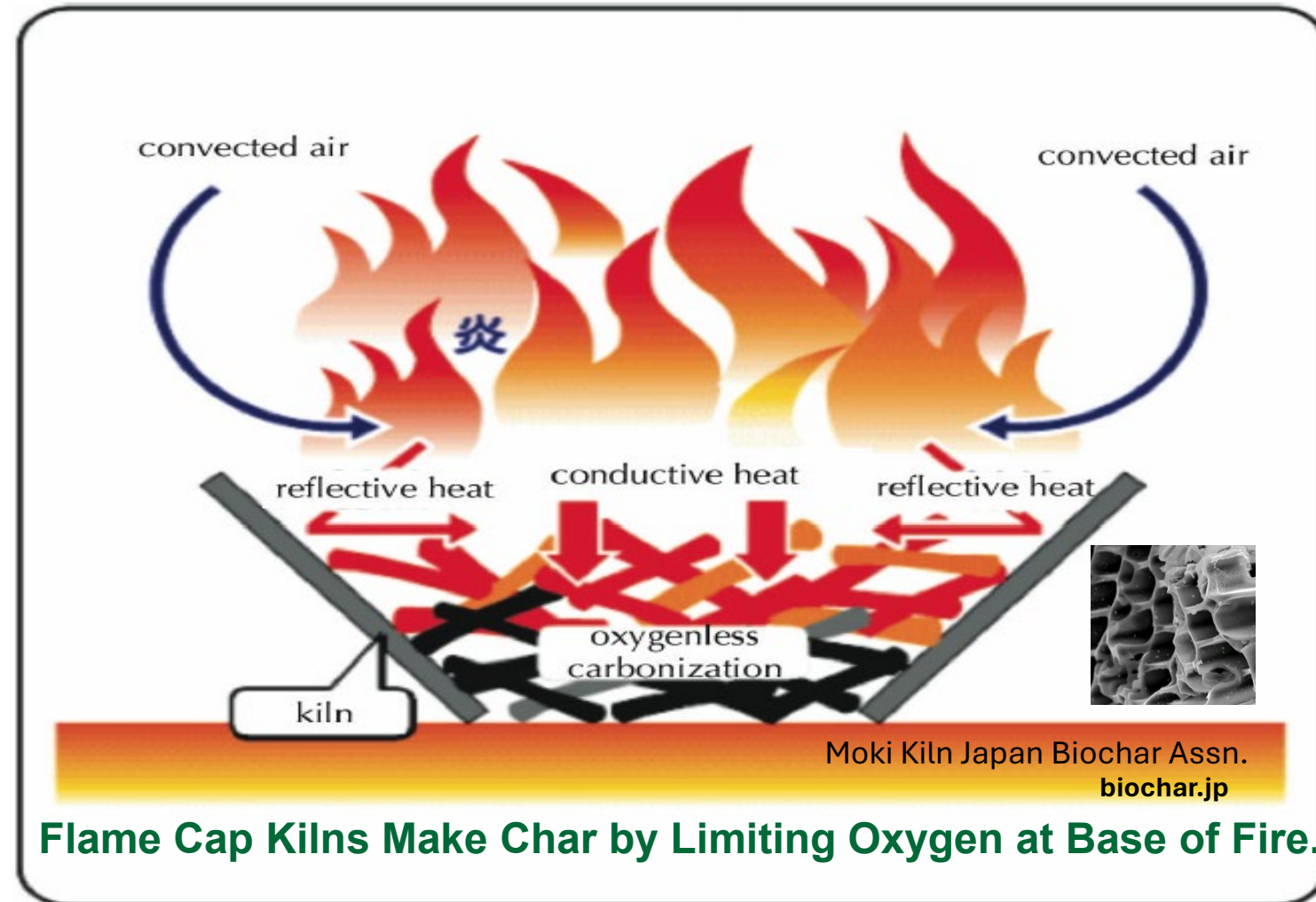


BiocharLife
An Impact Venture by Warm Heart Worldwide



BA
BIOAMAK LTD

Making Biochar: radiant flames heat biomass to make gas and char.



Benefits of biochar and manure added to soil



Food Security
Healthy Soil, Animals
Improved yield
Reduce inputs (chemicals)
Increased income



Saves Water (~75%)
Clean water
Potable water



Recycle nutrients
Manure, compost



Increases soil carbon
Stability from disruptions
Carbon revenue C-sink
Renewable fuel

Flame Cap Kilns Make Char by Limiting Oxygen at Base of Fire.

Biochar + Manure = “*Biochar Is A Farmer’s Best Friend*”

No Smoke. Healthy Crops. Healthy Animals. Happy Farmers.

Sr. Miriam
Paulette with
biochar from
flame cap pit at
the Carmelite
Monastery in
Zomba, Malawi.
Metal cover to
quench char.



Training to make
biochar in flame
cap pit kiln. No
smoke.



Warm Heart Worldwide Malawi

Kenya: Trainer
Everline with
bumper sorghum
crop.



Biochar + Manure
1:4

Everline’s corn
with biochar +
manure



vs

Her poor harvest
with commercial
fertilizer.



Warm Heart Worldwide, Kenya



Crop Residues as Feedstock in Place of wood



Training in Community Gatherings



TLUD for Cobs



An Impact Venture by Warm Heart Worldwide

www.biochar.life

**C-sink protocol provides income from
sequestered carbon**

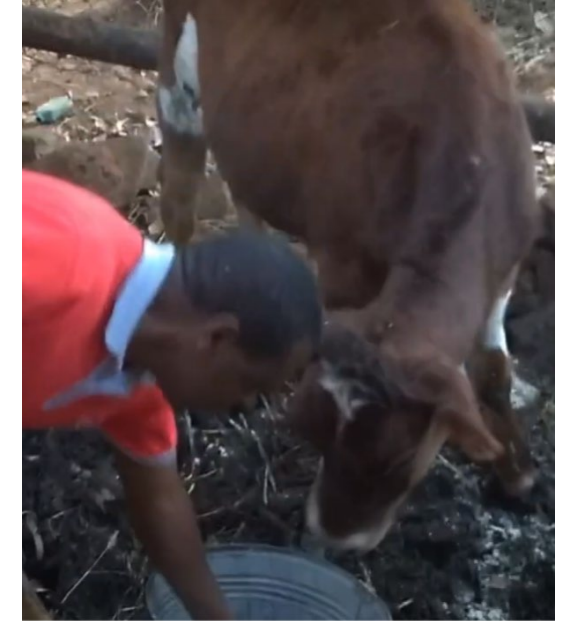


Biochar Life cools the climate by helping to remove carbon from the atmosphere.

Malawi: Biochar Uses



60% farmers biochar + manure (1:4)
maize , tomatoes, and vegetables



20% farmers biochar in animal feed –

- kill worms and as a traditional remedy for chicken arthritis locally known as “*Chitopa*”.
- Improved weight, meat, and egg production for local chickens fed on biochar mixed feeds.
- Reduced disease, increased milk production

Burundi: BioAmak Ltd. Rumonge Farmer Training



Barren eroded hills. Rumonge, Burundi
Photos: BioAmak Ltd.



Training farmers to convert maize stalks
to biochar. Rumonge, Burundi Feb 2024
Warm Heart DRC Congo/BioAmak Ltd.



Burundi: BioAmak Ltd. Farmers After One Year



Farmer Adolphe showing crops to trainers after two growing seasons with biochar fertilizer. Jan 2025



Buyer training farmer to plant chili peppers in soil amended with biochar fertilizer.

Photos: BioAmak Ltd.



Biochar C-Sink

BiocharLife Malawi is also directly working with 400 farmers on C-sink program from Zomba, Thyolo, Mulanje, Phalombe, Chiradzulu, Dedza, Ntcheu, Mangochi and Dowa district and close to 800 farmers indirectly.

The farmers are closely supervised by verifiers. Each verifier looks after 20 farmers. The farmers are producing over two tonnes of biochar each which they put in the soil after mixing with manure to improve their yields.

The income realized from the C-sink which on average is \$250 helps farmers to pay for schools fees for their children, buy new piece of land, livestock such as goats, while others re-invest in their farming.



Verifier grows tomatoes and vegetables with biochar fertilizer



Farmer uses carbon revenue to buy sewing machine

Benefit of Biochar C-Sink



Cart bought with carbon income used to transport corn stover and manure to make biochar fertilizer.



Beans, maize, onions and Irish potatoes on irrigation farming enabled with biochar + manure and C-sink revenue

Mrs Mwale, one of farmers on c-sink program from Dowa district reported that she used two tonnes of biochar on a one acre plot. She further narrated that she has harvested 98 bags of 50 kg each, of maize.

Biochar C-Sink



Mrs. Mwale is among 400 farmers receiving \$250 from biocharlife. Apart from seeing improvement in crop production, she also purchased a piece of land where she is opting to embark on irrigation to catch up with inadequate rainfall.

Green Fuel Briquettes from Maize Stalk Biochar



Charcoal Briquettes from Maize Stalks,
Rumonge, Burundi (BioAmak Ltd.)



Charcoal
Briquettes from
Maize Stalks
Malawi
(Warm Heart)



Green Charcoal Briquettes (KABIOF
Makara) and biomass logs ("KABIOF
Rukwi") from Maize Stalks, Gitega,
Bujumbura, Burundi

Kaze Green Economy



www.warmheartworldwide.org



www.biochar.life



Thank You!



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International Biochar Initiative
United States Biochar Initiative



Biochar-international.org



Circular BioNutrient
Economy Network
Nairobi
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