

Farm Social

Food for the Generations

About



Co-Founder
Daniel Morgan
Medical & Business Designer



Co-Founder
Eoin Bracken
Product & Packaging Designer

Farm Social is a social venture that works with farmers in developing countries. While in University Daniel & Eoin won an National Competition, 'Where There is No Engineer', which looked for practical solutions to help communities build resilience in developing countries. Their winning design was a Biokiln, which helps farmers produce food using sustainable non-chemical soil fertilisers. The Biokiln takes organic waste, home & agricultural residues, and efficiently turns the waste to Biochar. Biochar is a term that simply describes a carbon, a carbon that is used for agricultural purposes. One of the reasons the founders of Farm Social want to give farmers in developing communities access to Biochar is that Biochar can be used to increase crop productivity by 40%. Converting unused green waste into a valuable Biochar product can become part of a sustainable solution to help small holder farmers who are subjected to poor agricultural conditions & limited resources. Farm Social is partnered with Engineers Without Borders Ireland.

Sustainable Food

Soil health is at the core to the success & failure of food production.

The extensive use of chemical fertilisers have been detrimental to our soils around the world. Chemical fertiliser kill the beneficial bacteria in the soil. Bacteria plays a vital role in the soils ability to provide nutrients for crops. According to research carried out by Farmers Footprint U.S the use of chemicals in our food production is a root cause of serious health conditions such as cancer.

Soil Health = Food Health = Human Health

Even without chemical fertilisers farmers in developing countries are still at a disadvantage due to limited resources and poor agricultural conditions.



Agricultural Waste

Rural Farmer

Maize



Biochar

Biochar is a wonderful soil fertiliser & multi purpose agricultural material. Biochar has a highly porous & resilient structure.

Farmers who have access to biochar are able to freely create their own biofertiliser using biochar, water, compost & manure.

Like a sponge, due to its porous structure, biochar is able to absorb and hold nutrients. When added to the soil during planting the biofertiliser acts like a supplement and provides energy, nutrients & water to the crop.

Overtime the resilient structure of biochar remains in the soil for generations. Its presence increases soil air flow, prevents nutrient leaching and most importantly provides conditions for microbial activity leading to overall soil health. Soils with Biochar increase crops resilience to drought.

Biochar is not Charcoal. Charcoal is not a pure carbon which is used for fire. While Biochar is a pure carbon used for agriculture.

Carbon

Porous & Resilient

Soil Fertiliser

The Craft

The craft of making biochar is not a new concept. For years farmers have reaped the benefits of biochar. But the craft of making biochar is being lost due to the introduction of chemical fertilisers.

Currently, biochar is made inefficiently either in open fires, cook stoves or poorly made kilns. The disconnect between producing biochar & making biochar safely, sustainable & efficiently is merely due to lack of resources, technology and understanding.



Biokiln

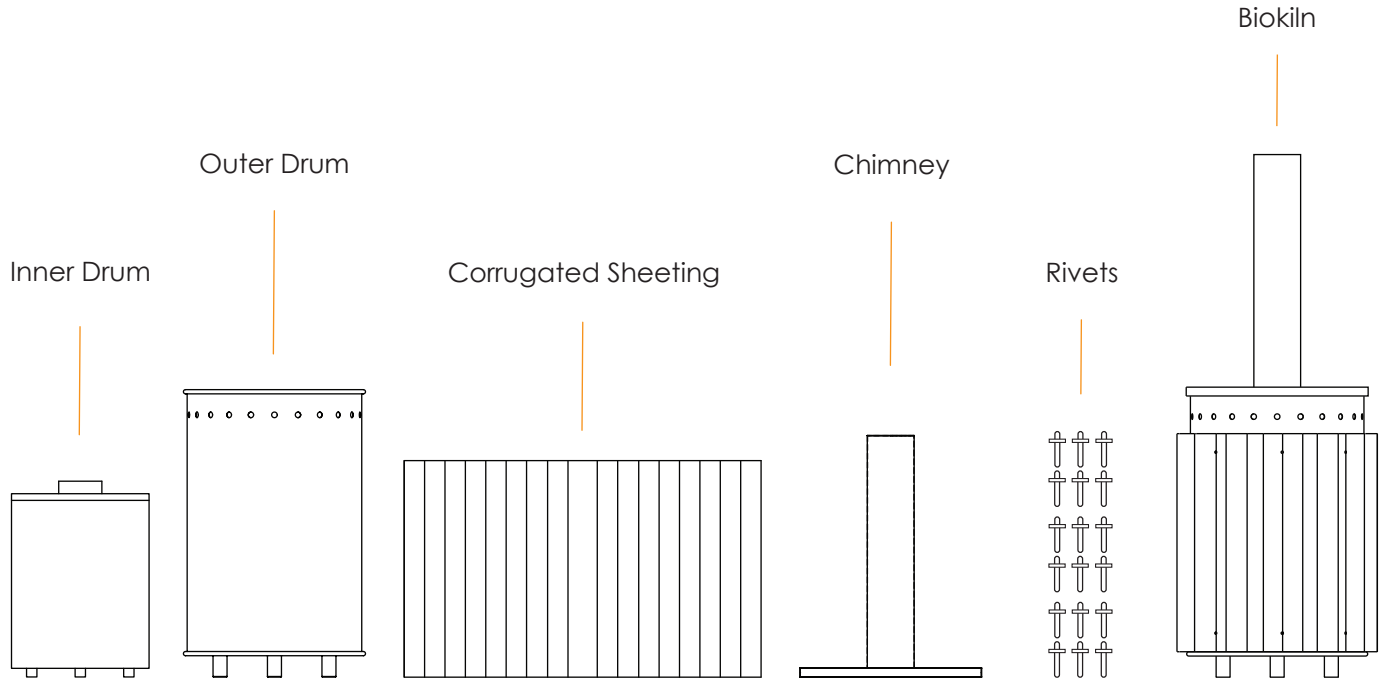


- Biochar Production
- Cooking Application
- Heating Source



Parts

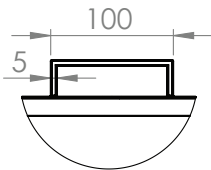
Number of Parts: 6
Fabrication Time: 2 Hours
Product Weight: 10 KG



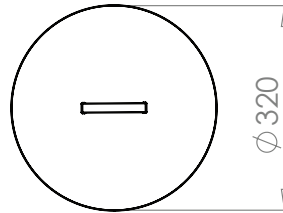
Build

Part: 25L Inner Drum
Drawing Units: mm
Material: 1-3mm Steel

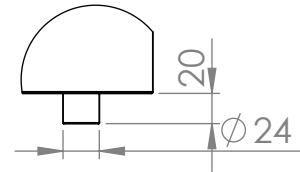
Handle



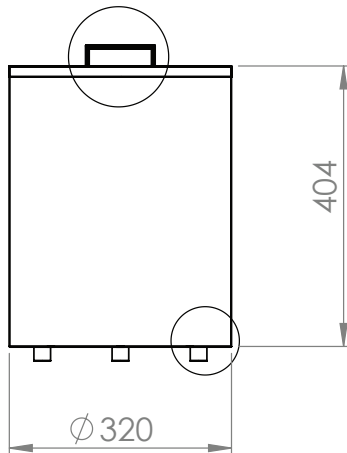
Lid



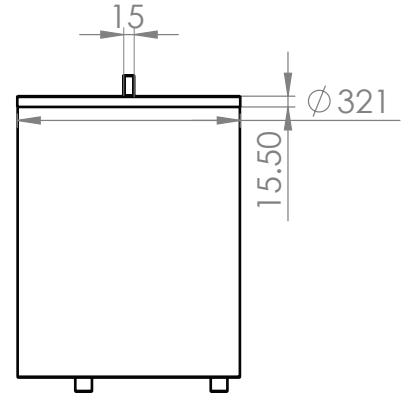
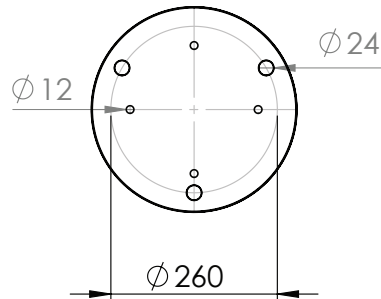
Tripod Leg



Drum

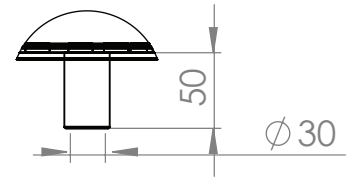
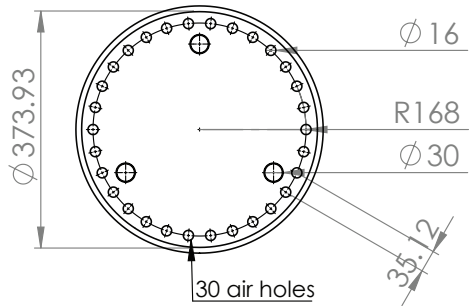
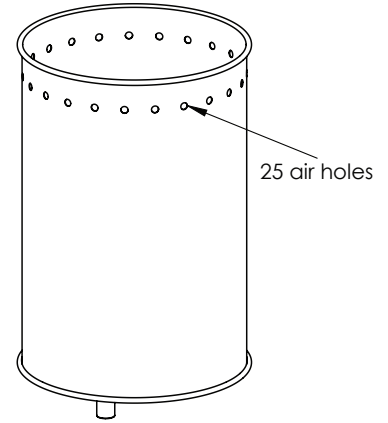
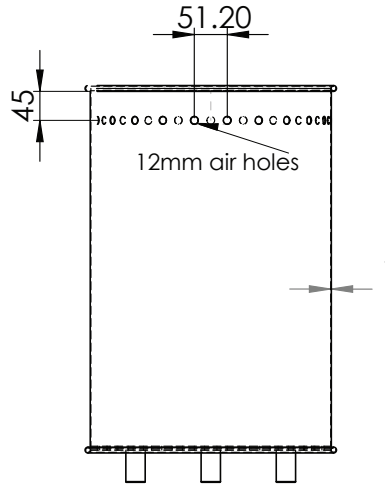
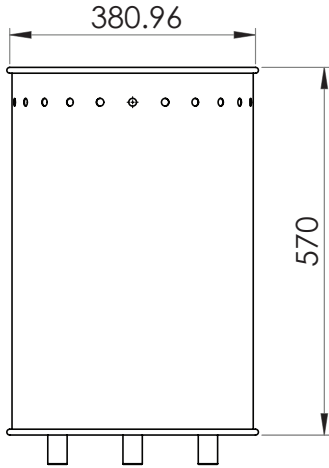


Base



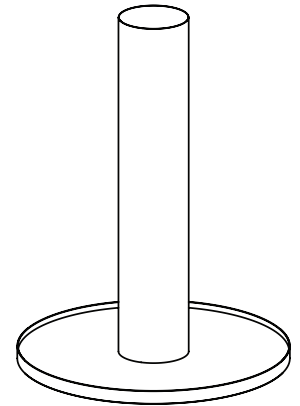
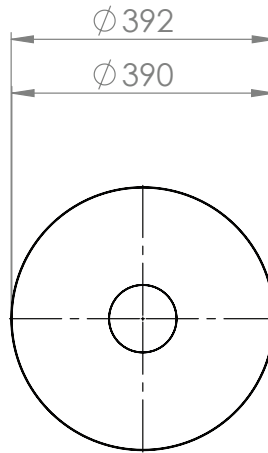
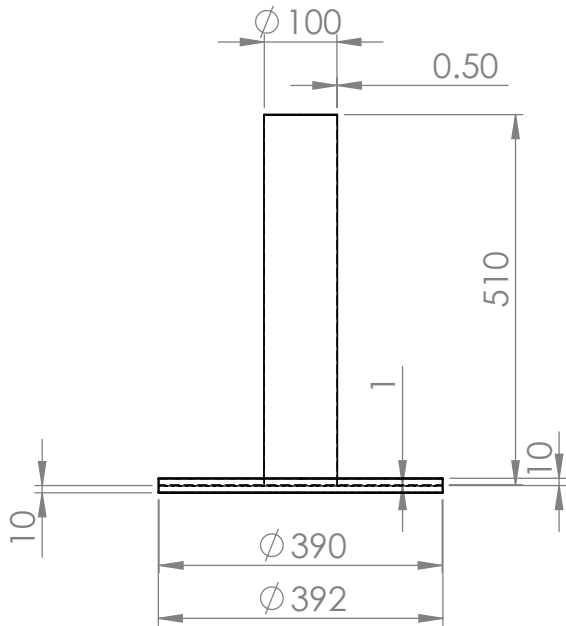
Build

Part: 60L Outer Drum
Drawing Units: mm
Material: 1 -3mm Steel



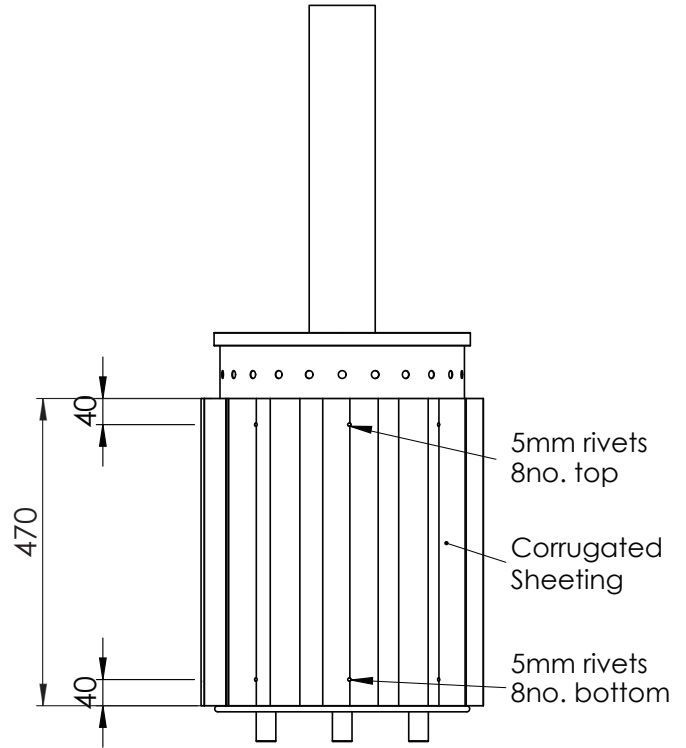
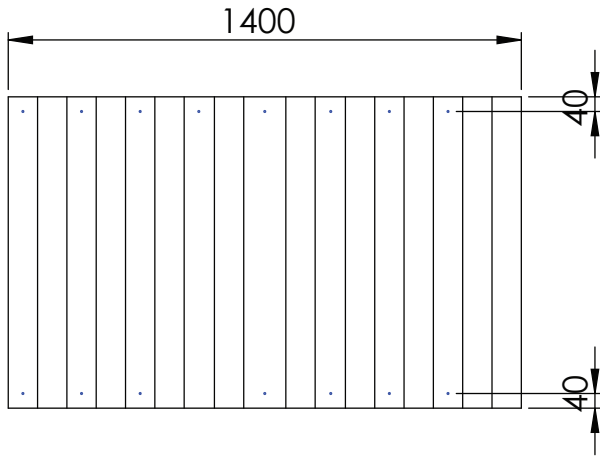
Build

Part: Chimney
Drawing Units: mm
Material: 1-3mm Steel



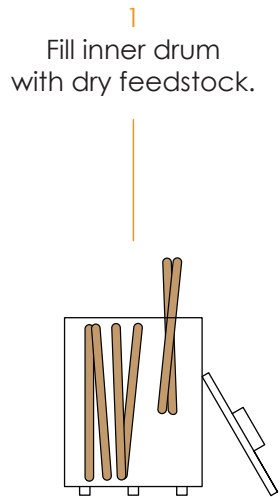
Build

Part: Sleeve
Drawing Units: mm
Material: Corrugated

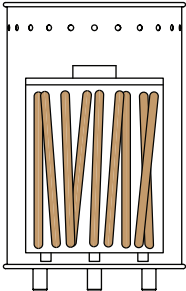


Burn

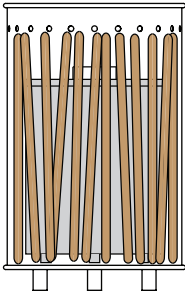
Burn Time: 2 Hours
Temperature: 400 - 600°C
Production: Biochar



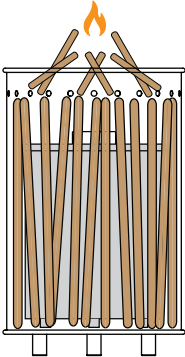
2
Place inner drum
inside the outer drum.

A diagram showing the inner drum from step 1 being placed inside a larger, rectangular outer drum. The outer drum has a lid with several small circular holes around its perimeter.

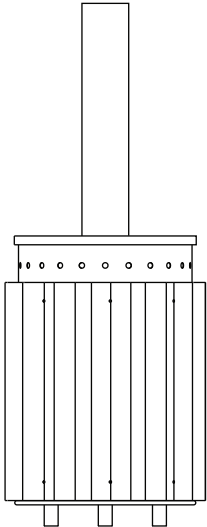
3
Place more dry feedstock
around the inner drum.

A diagram showing the inner drum now fully surrounded by a layer of dry feedstock within the outer drum. The sticks are packed closely together.

4
Set fire to a kindle pile
on top of the drum.

A diagram showing a small pile of sticks on top of the drum, with a flame rising from it, indicating the start of the burning process.

5
Place chimney
on top.

A diagram showing a tall, rectangular chimney being placed on top of the drum. The chimney has a lid with several small circular holes around its perimeter, matching the outer drum.

Biofertiliser

Tips: Crush the biochar in a bucket using a shovel,
To reduce any dust when crushing the biochar
add water,

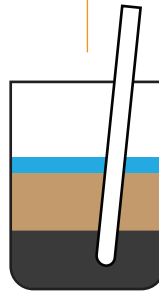
After the burn, remove
inner drum from the Biokiln.



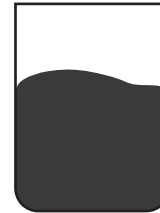
Crush biochar into
a fine grain.



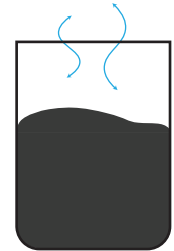
Biofertiliser: 50:50 mixture
biochar & compost
1 litre of water.



Leave the biofertiliser
for 2 Weeks before use.



Store in a cool dry place
Do not seal mixture.



Planting

Dig row along
soils top layer.

Place a thick layer of biofertiliser
along the base of the row.

Place crops roots
into the biofertiliser.

Backfill the row
with soil.



Crop Yeild



MicroAnalysis

Overview:

Four Biochar samples were tested in a materials laboratory on the 21st February 2019.

Results:

Sample 1: 56% Carbon

Sample 2: 76% Carbon

Sample 3: 56% Carbon

Sample 4: 95% Carbon

Sample Avg: 70% Carbon

The tested samples also include the following trace elements.

(O) Oxygen: 5%

(Mg) Magnesium: 0.75%

(Si) Silicon: 8%

(K) Potassium: 3%

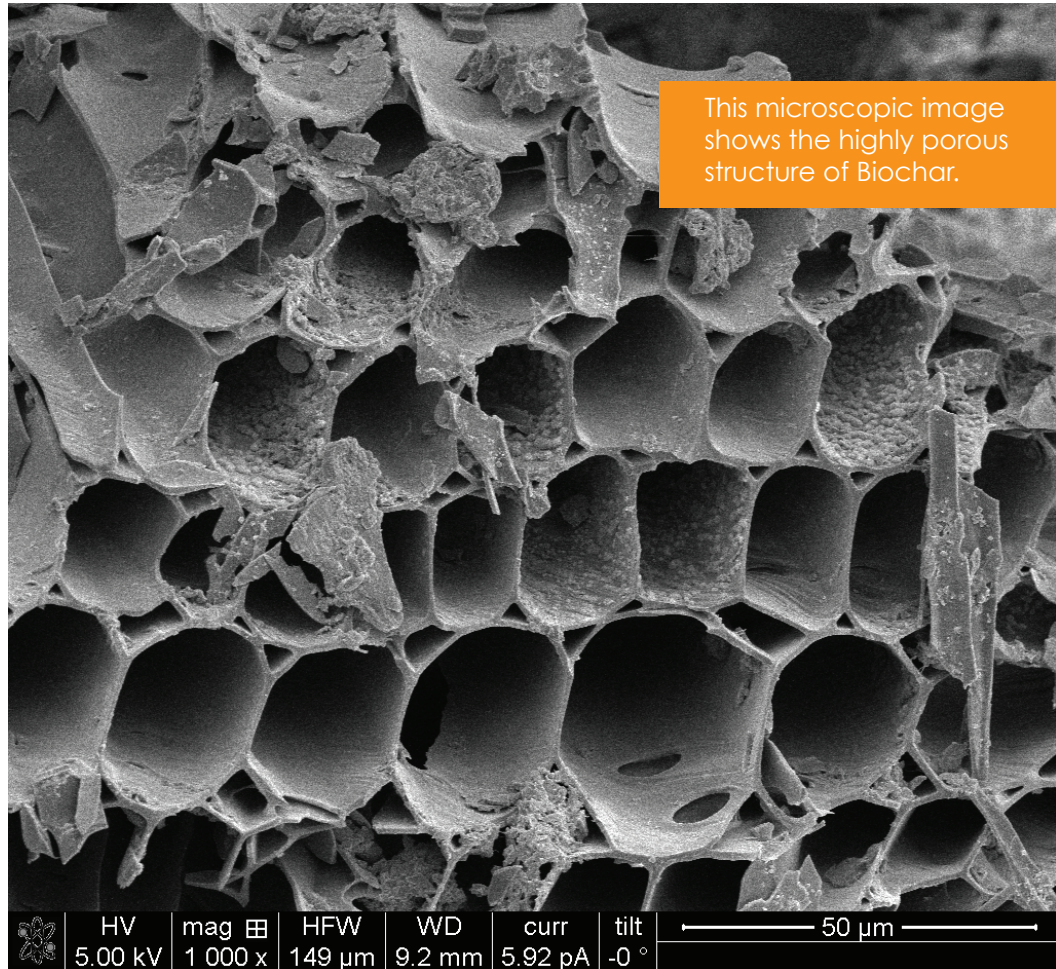
(Al) Aluminium: 1%

(P) Phosphorus: 0.8%

EDAX TSL

advanced microanalysis solutions

AMETEK



Impact

Location: Bittijor, Nepal
Farming Community: 1000 People
Pilot Summary:

Within 5 days of arriving at Bittizor, Farm Social sourced materials & manufactured two Biokilns in a local workshop. The team carried out two demonstrations showing the farmers the Biokiln features to produce Biochar, and how to use the Biochar in their farming practices. Both Biokilns were handed over to the community.



Materials



Fabrication



Demonstration



Interaction



Hand Over

Impact

Location: Phulai, Nepal
Farming Community: 800 People
Pilot Summary:
Phulai is a farming community based in a very remote region of North Nepal. One day's hike to Phulai, through the Everest Mountain Range. Farm Social carried out two demonstrations. Demonstrations took place at a Primary & Secondary School. Educating the next generation of farmers of about the importance of Biochar.



Transport



Primary School



Secondary School



Interaction



Hand Over

Talk to us.

For more Farm Social content
visit eoinbracken.com

Email: farmsocial@outlook.com

Instagram: [farm.social](https://www.instagram.com/farm.social)