Biochar Production
at Dolakha, Nepal, December 2014

General remarks

- 3 different kiln types were installed at the Hill Crop Research Station, Dalakha
- 2.5 m3 of biochar was produced
- 2 types of biochar were used for two scientific and nine farmer trials
- 250 l of biochar-compost was prepared for the continuation of the scientific field trial
- 1 Kon-Agno kiln was built with local farmers in the nearby village

Igniting the metal kiln (Kon-Tiki) and the soil pit kiln (Kon-Agno) works the same

Kon-Tiki and Kon-Agno Biochar Kiln in the starting phase of pyrolysis

building up the pyrolysis front with more energy rich feedstock

using some more bamboo in the beginning

clean vortex combustion of pyrolysis gases

building of the pyrolysis layers

corn cobs are excellent biochar feedstock

two kilns running parallel

soil quenching of the soil pit kiln

homogenizing the pyrolysis layer

close to the end layer

end of pyrolysis in the pit kiln

a Kon-Tiki full of quenched biochar

A m3 of biochar in the Kon-Tiki

Digging out of the biochar from the soil kiln

800 l of biochar mixed with some clay in the soil pit kiln

quench water can be used as shampoo or leave fertilizer

chared corn cobs

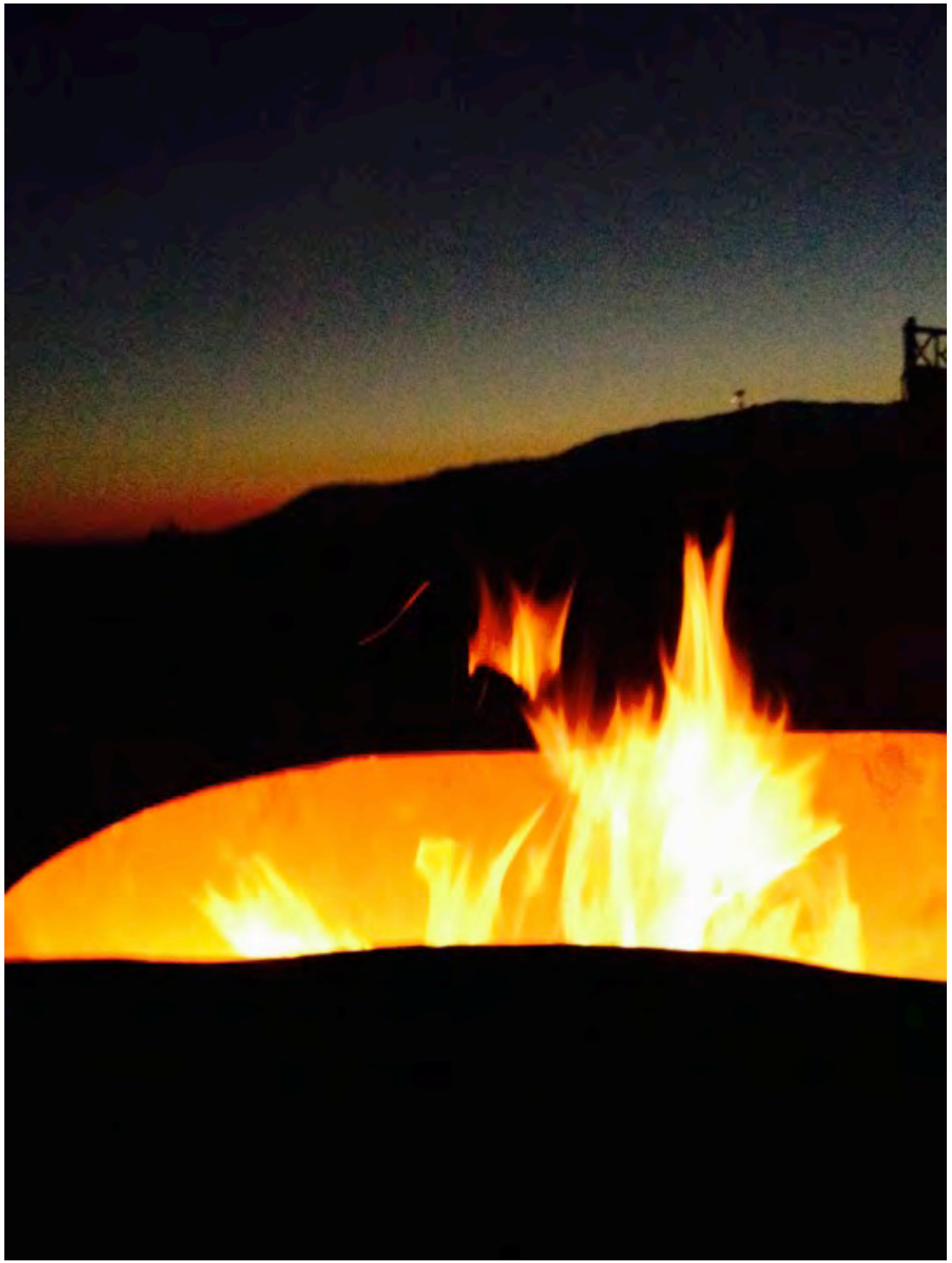
transporting the biochar to the site

manual grinding of the biochar

manual grinding

fine grinding with stones
a mill will be built for the next sites

Mixed metal –soil pit kiln
an economic highly performant kiln type



very clean
combustion
dynamic

thanks to the heat reflection of the metal cone shield and the insulation of the clay-pit

high and homogenous temperatures in the pyrolysis layer

final pyrolysis layer

Biochar Production
at Parwanipur (Terai), Nepal, January 2015

General remarks

- The full scale Kon-Tiki and the metal-soil (Kon-Agno) kiln were installed at NARC research station in Parwanipur (Terai).
- 1.5 m3 of biochar was produced
- The 2 types of biochar were used for two scientific (onions and maize) and six farmer trials (onions)

The wood for igniting was freshly cut and thus very humid

it took thus some more time to get into pyrolysis mode

both kilns were fired simultaniously

finally the necessary heat was atteined to start pyrolysing rice husks

view into the earthen bottom of the metal-soil kiln

building of the pyrolysis layers

building of the pyrolysis layers

rice husks and sugar cane are excellent biochar feedstock when blended in the right proportion and timing with more bulky and energy rich feedstock like wood (needs experienced char maker !)

2 m3 of rice husks were pyrolysed

see the rice husk heap in the background which was reduced by more than half (> 2 m3) with one run of the two kilns

two kilns running parallel

close to the end layer

water quenching of the Kon-Tiki

a Kon-Tiki full of quenched biochar

soil quenching of the soil pit kiln

A m3 of biochar in the Kon-Tiki

clean combustion dynamic

Biochar Production
at Panchkhal (Kabre), Nepal, January 2015

General remarks

- The full scale Kon-Tiki and the metal-soil (Kon-Agno) kiln were installed at Spices Crop Development Center in Panchkhal (Kabre).
- 800 l of biochar was produced from saw mill waste
- The biochar were used to test different nutrient charging techniques for a scientific field trial with ginger.
- The biochar was further used for a farmer trial with urin enriched biochar as fertilizer for ginger

Saw mill waste was used as feedstock. It was very humid (4000 NRP / t)

transport of feestock to the site

Kon-Agno

... and Kon-Tiki were fired simultanously

due to humidity and the bulky wood material the pyrolysis took the whole day

view into the Kon-Tiki kiln

finishing of Kon-Agno

using the hot char for improved nutrient charging

blackening scientist‘s work

Need for manual mills

finally a mill that works without electricity

Installation of Kon Agno in Coffe Farm

Emission tests with Gerard Cornelissen

testing different designs