

Making biochar in soil pit kilns



Soil pit kilns are the most ancient technique of making biochar



dig the pit with a diameter of 2 meters
and a depth of 1 meter



The sidewall should be shallow enough to
walk in



The diameter to depth ratio should be around 2 : 1

It is an advantage when the soil is rich in clay



If the soil is sandy or contains too many stones, apply a clay plaster



after the first firing, the clay plaster will make the kiln water proof to recover the quenching liquid



Add a layer of stones as rim shield, for wind protection and updraft of combustion air



Put some dry feedstock in the middle of the pit
and lit the fire at the top



Enkindle the fire from the top



Light the pyramid pile from the top

creating the up-draft



let the fire burning to about 1/3 from the top of the stack or pyramid creating a strong up-draft which pulls in air at the side walls of the pit. Spread then the feedstock at the bottom.

Making blaze for the first charring layer



When enough air reaches the bottom of the pit to make it catch fire, level the burning feedstock wood to create the blaze for the first charring layer.

Add then layer by layer new feedstock





The best
control if you
do right:
no smoke

depending on the feedstock and its water content, the flame
rises higher or lower, but the most important is:
no smoke



Time to put the next layer



When ashes appear on the wood, put a next layer of wood.
The charring continues beneath the fire front.

Time to put the next layer



When ashes start to appear on the feedstock, put the next layer of feedstock. The charring continues beneath the fire front.

charing temperature 650° to 700°C



The temperature at the surface of the blaze is around 620° to 660° C depending on the humidity of the feedstock.

time to quench



Stop the kiln either by water or ...



Quench the kiln with water partially activates the biochar (cleaning of the biochar pore structure and increasing surfaces)

or charge it hot with cow urine to make
biochar-fertilizer





or quench it
with soil and
wait 24 hours

Easy to make 500 l of biochar in 2 hours

