

# Geotechnical properties of sand mixed with Biochar

Gislaine Pardo | University of Auckland

## Introduction

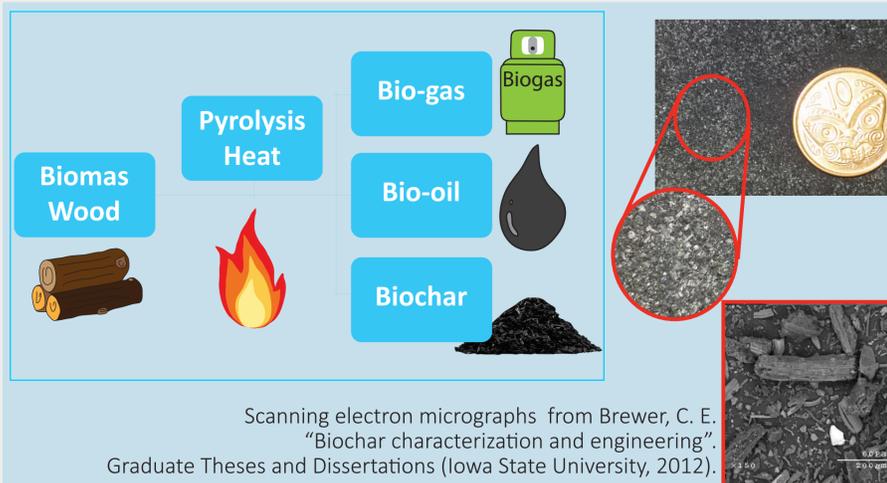
Many current methods to improve soil conditions are high-energy consumers and involve the introduction of chemicals into the ground. In addition, wood wastes coming from forestry and timber industries are increasing every year in New Zealand. There is a need for environmentally friendly solutions that help to improve soil and, at the same time, provide a solution for wastes and minimize carbon emissions.

## What is Biochar



Biochar is a recycled material obtained through pyrolysis in the manufacture of bio-oil. It can be obtained through waste wood and it is an organic material that can endure in soil for thousands of years. It can modify pore size distribution, provide aggregate stability, and has a large water holding capacity.

This material has been commonly used in environmental and agricultural applications. However, there is little research conducted on the geomechanical properties of soil mixed with some Biochar.



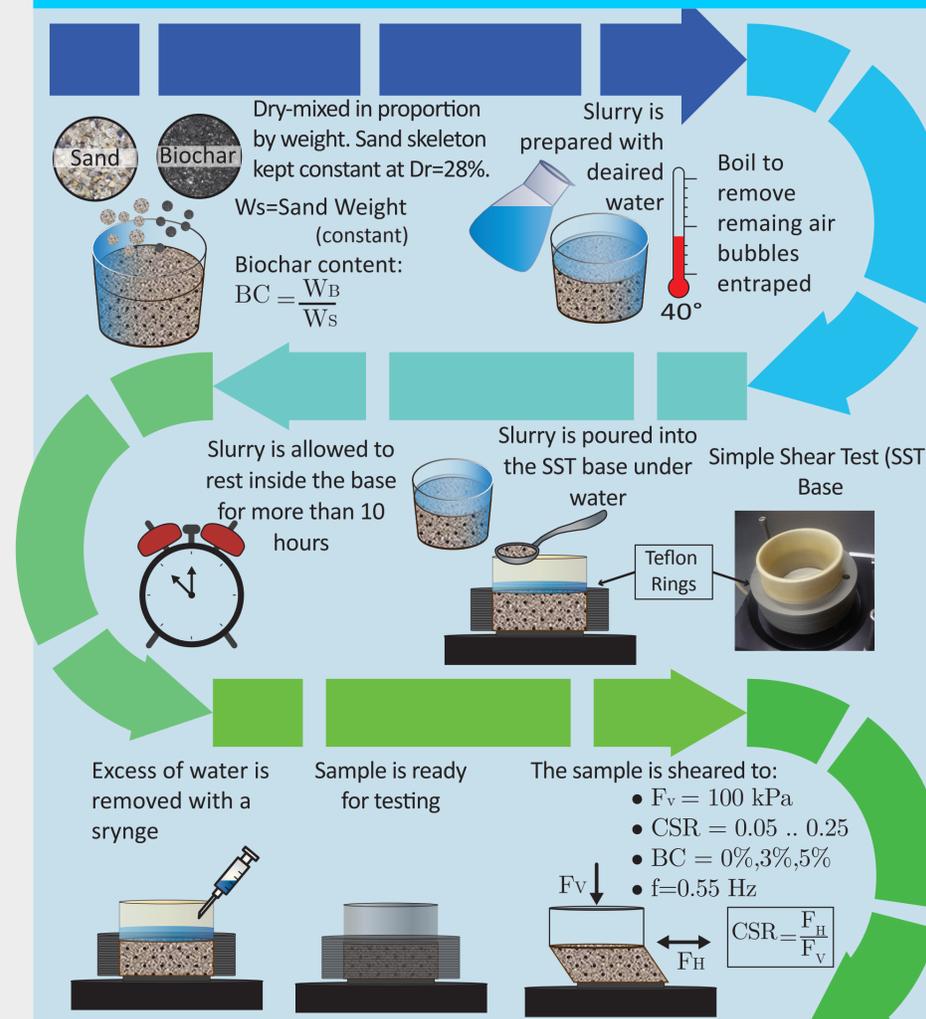
## Research Questions

- Could Biochar help improve the geotechnical properties of loose clean sand?
- Could it mitigate the occurrence of liquefaction?

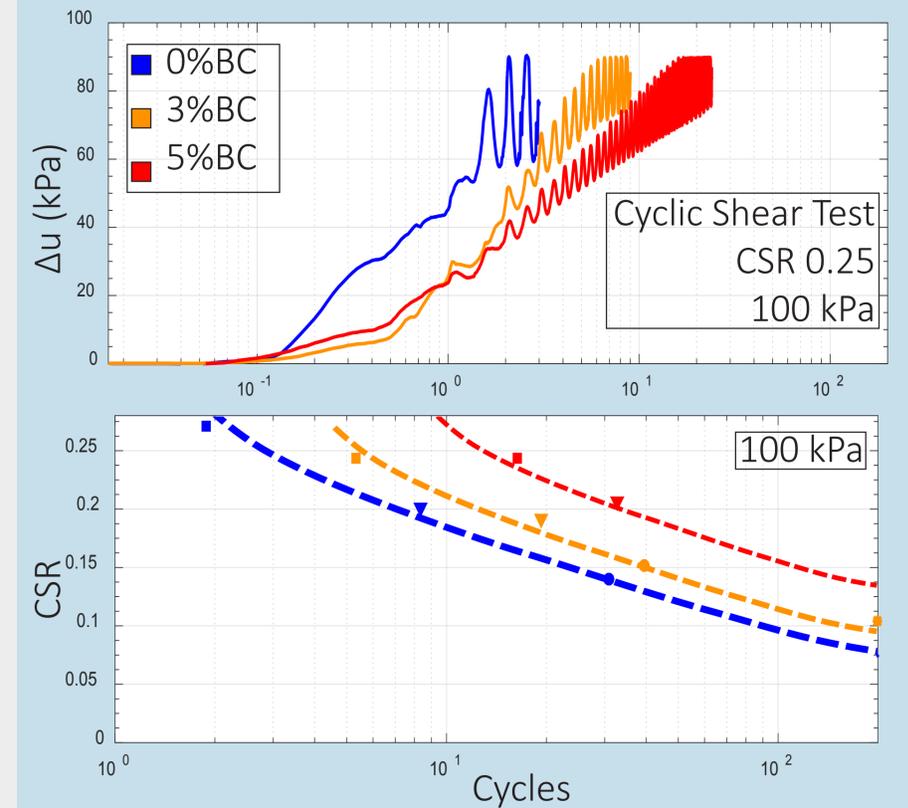
## Materials

Waikato River Sand				Biochar	
$G_s$	$D_{50}$ (mm)	$e_{max}$	$e_{min}$	$G_s$	1.34
2.65	0.81	0.854	0.629	$\mu m$	<75

## Procedure



## Results



## Conclusions

The preliminary results indicate that biochar, indeed, increases cyclic resistance. Biochar could be used to manage wood waste and to develop new alternatives to mitigate liquefaction.

More tests are required to establish the trend and to assess static resistance. In the next stage of the research, interparticle interaction will be studied to better understand how Biochar improves the cyclic resistance of clean sand.

## Acknowledgment

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