Geophysical Research Abstracts
Vol. 17, EGU2015-1389-1, 2015
EGU General Assembly 2015

Challenges in Designing Biochars for Specific Uses: Influence of Feedstock, Pyrolysis Temperature and Type

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Biochar feedstock choice, pyrolysis temperature and type (fast or slow) may be varied to optimize end-product uses. In general, increasing pyrolysis temperature tends to decrease biochar yield, but increase biochar total carbon, potassium, and magnesium content, pH, lime equivalency, and surface area, and decrease cation exchange capacity. Slow pyrolysis, in general, causes biochars to have greater nitrogen, sulfur, available phosphorus, calcium, magnesium, surface area, and cation exchange capacity as compared to biochars produced using fast pyrolysis. This presentation focuses attention on various biochars and the effects pyrolysis temperatures and types have on inherent biochar nutrients (total and available), pH, potential liming value, cation exchange capacity, and nutrient sorption and entrapment.