Geophysical Research Abstracts
Vol. 19, EGU2017-72, 2017
EGU General Assembly 2017

Slutioneering Land Degradation Neutrality with biocjhar

Genxing Pan, Chong Ma, Xiaoyu Liu, Lianqing Li, Haifei Lu, Huimin Zhou, and Morris Omandi
Nanjing Agricultural University, Nanjing, China (pangenxing@aliyun.com)

With the newly developed co-production of bioenergy and biochar via pyrolysis of avaliable crop straw feedstock, a potential biochar production and land application is visioned up to 1 billion metric tons per year globally. However, the potential of biochar to tackle golbal land degradation has not yet profoundly explored while many tesearches on biochar spil amednment for soil fertility improvement and carbon sequestration in agriculture. In this study, we synthesized data of biochar's role in improving soil aggregation and structure, moisture retention and hydrological movement as well as improving soil microbial abundance and actvities. Land degradation, including soil erosion, soil compaction and soil drying as well as soil salinazation, could be mostly due to depletion of soil organic matter and consequently destabilization of soil aggregates and structure . Biochar addition to soil and land, has been shown to fast recover soil C stock and greatly improve soil aggregation and soil moisture retention though the effects on plant productivity may be relatively samll. Furthermore, biochar use in degraded lands helps to recover soil mcirobial community and imprve their metabolic carbon sue efficiency. Thus, biochar through carbonization of biomass grown in croplands and marginal lands, could be a solution to prevent or to control land degradation with win-win-win strategies of carbon capture and sequestration, erosion reduction with enhanced aggregation and moisture infiltration and enahnced soil miorbial health. Land degradation neutrality project with large amount of biocharn incroportation could become viable where cost effective biochar production is feabile using avalable feedstock and where subsidies are provided by land degradation neutrality trading mechanism. Multi-disciplinary pilot land degradation projects are urged focusing biochar effects on biophysical changes of degraded lands and on changes in land surface fucntioning and ecological services provided.