Geophysical Research Abstracts
Vol. 18, EGU2016-17450, 2016
EGU General Assembly 2016

Effect of biochar application on Cd accumulation and Cd/Zn ratio of rice grain

Lianqing Li, De chen, Hu Guo, and Jing Zuo

Institute of Resources, Ecosystem and Environment of Agriculture, and Center of Biochar and Green Agriculture, Nanjing Agricultural University, Nanjing, China

Effect of biochar application on Cd accumulation and Cd/Zn ratio of rice grain

De Chen Hu Guo Jing Zuo Lianqing Li Genxing Pan

Institute of Resources, Ecosystem and Environment of Agriculture, and Center of Biochar and Green Agriculture, Nanjing Agricultural University, 1 Weigang, Nanjing 210095, China

Remediation of heavy metal contaminated soils is a issue. Biochar is becoming an environmentally friendly material for remediation of heavy metal contaminated soils and improving food safety. Rice (Oryza sativa L.) is the main staple food in China and is cultivated on about 27% of the nation's cropland area. There is a wide variation in Cd uptake and accumulation among different rice cultivars. In addition, rice can exclude Zn, Fe and Ca with higher uptake of Cd and lead to insufficient accumulation of these elements in rice grain. It is suggested that a Cd/Zn ratio of less than 0.015 in the grain can effectively protect from Cd induced health impacts. We conducted the pot and field experiment to investigate the effect of biochar application on Cd and Zn uptake by rice in heavy metal contaminated soil. Our results showed that biochar significantly decreased Cd uptake, but did not affect Zn uptake. Cd/Zn ratios of rice grain significantly decreased. Soil pH was sustainably increased ,and concentrations of CaCl2 extractable Cd and Zn greatly decreased by biochar application. It suggested that It indicated that biochar application should be an efficient way to remediate Cd contaminated rice paddies and reduce health risk.
Key words: biochar, rice, heavy metal, contaminated soils