



## **Influence of biochar amendment on greenhouse gases emission and rice production in paddy field, China**

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Biochar incorporating into agricultural soils as a strategy to increase soil carbon content and mitigate climate change received great attention. We present a field study about biochar amendment into paddy field in Sichuan province 2010, China. The objective was to evaluate the impacts of biochar incorporation on rice production and greenhouse gas emissions. Biochar used in this study was produced from wheat straw at temperature 350–550°C. Biochar incorporated into paddy field before rice transplanting. Methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and carbon dioxide (CO<sub>2</sub>) fluxes were measured in situ using closed chamber method during whole rice growing season. Flux of greenhouse gases was monitored at about 7 day's interval. Two rates of N fertilizer (0 and 240 kg N/ha) were applied as urea in combination with 3 biochar rates (0, 20 and 40 t/ha). Amendment of biochar had no influence on rice yield even at the highest rate of 40 t/ha. However, rice production was greatly relying on chemical N fertilization input. No interact effect was detected between biochar and N fertilizer. Amendment of biochar suppressed N<sub>2</sub>O emission. During the whole rice growing season, the total N<sub>2</sub>O emission from chemical fertilizer was reduce by 29% and 53% under biochar amendment rates of 20t/ha and 40t/ha respectively. Total amounts of CO<sub>2</sub> and CH<sub>4</sub> emitted from paddy fields during whole rice growing season were not greatly increased despite of much carbon brought into soil with biochar. However, biochar amendment slightly increased CO<sub>2</sub> emission in the absence of N fertilizer. Our results showed that biochar amendment into paddy field did not increase the global warming potential (GPW) and greenhouse gases emission intensity (GHGI).