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Select Theme	: Climate change and environmental sustainability
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Keyword 2	: Soil, water, and air pollution
Keyword 3	: Environmental sustainability
Title of Entry	: The Effect of Nitrification Inhibitor and Water Management on CH4 and N2O Emissions in Rice Field
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The application of urea-based fertilizers is a common practice in agriculture, particularly in the rice field. Laboratory and field studies were conducted to determine the reduction of CH4 and N2O emissions under water management of continuous flooded (CF) and non continuous flooded (NCF) system in Indonesia. It was also to evaluate whether the grain yield of rice was affected by the both of water input in combine urea granulated with nitrification inhibitors (NIs, neem cake, and DCD) and natural slow realize (zeolite) as nitrogen use efficiency. Two plots (CF and NCF) and five treatments namely control (C), urea granule (UG), urea granule with zeolite (UGZ), urea granule with zeolite and neem (UGZN), and urea granule with zeolite and dicyandiamide (UGZD) were implemented during rice cropping season in Indonesia. The use of urea with NIs and zeolite tended to lower N2O emission in both plots of CF and NCF compared to urea alone, while emissions of CH4 were induced particularly at CF plot. However, there were no significant differences in CH4 and N2O emissions among the type of urea granulated with NIs and zeolite to urea treatments in both water input management. In paired comparison between CF and NCF plots showed a significant difference of CH4 emission at UGZN treatment and lesser emissions of CH4 and N2O in NCF plot compare to CF plot. The effect of urea with NIs and zeolite on improving rice grain yield was also not different from urea alone. The nitrogen use efficiency used in this study has little effect for delayed oxidation of NH4+ in both plots of rice field soil and assuming that the retarding the NH4+ in soil due to the anaerobic condition in field soil. The combined application of fertilizer increased the growth of bacterial AOB while UG and UZD decreased the bacterial NOB population under submerged soil conditions. The study showed that the water management or irrigation is practicing promise to reduce CH4 and N2O emissions compared to the application of nitrogen use efficiency. Read Less»

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