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Biogeosciences Discussions

Interactive comment on "Responses of N_2O and CH_4 fluxes to fertilizer nitrogen addition rates in an irrigated wheat-maize cropping system in northern China" *by* C. Liu et al.

C. Liu et al.

xunhua.zheng@post.iap.ac.cn

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We would like to thank the anonymous reviewer for the constructive comments.

(1) The increased fertilizer rate linearly increased the cumulative N2O emission in both the wheat and maize seasons. The cumulative CH4 uptake by the soil tended to be enhanced at higher fertilizer rates ($\geq$ 350 kg N ha-1) in the maize season whereas no effect was observed for the wheat season. We do agree to evaluate the effects of increased fertilizer rate on total CO2-equivalents of N2O emission and CH4 uptake. Basically, the effects of increased fertilizer rate on CH4 uptake were quite limited. Therefore, the result of optimized fertilizer rate will not be changed. Due to limitation of

measuring method (opaque chamber method), we can not detect the net ecosystem CO2 exchange and estimate the effects of increased fertilizer rate on CO2 exchange.

(2) The current price for urea, wheat and maize are 2150$\sim$2350 RMB t-1, 2273$\sim$2386 RMB t-1 (water content $\leq$ 12%), and 2222$\sim$2339 RMB t-1 (water content $\leq$ 14.5%), respectively, in the research area. We calculated the income for all treatments based on the input of fertilizer and output of crop yield. As compared with the treatment N270, the farmer lost money when the fertilizer rate was above 400 kg N ha-1 for wheat (N850). Except for this case, due to the relatively low price of fertilizer, the farmer always can profit from higher fertilizer rate. That's why we should consider the environmental effects (such as N2O emission) for the optimized fertilizer management.

(3) We do agree to keep the description consistent in the parts of abstract, results and discussion.

Interactive comment on Biogeosciences Discuss., 8, 9577, 2011.