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	Title of thesis: <i>Brachiaria brizantha</i> cv. <i>Xaraes</i> yields and soil greenhouse gas emissions from fertilized humic nitisols of central kenya Problem investigated and why In sub-Saharan Africa N₂O accounts between 6 and 19 % of the global total GHG? Improved <i>Brachiaria</i> is widely promoted in East Africa amongst small scale farmers to mitigate GHG emissions. The challenge facing smallholder farmers is to strike a balance in terms of feed productivity while simultaneously lowering GHG emissions as well as soil-nutrients mining. <i>Brachiaria</i> is believed to be superior to other tropical grasses in terms of biomass production and nutritive quality. This is largely unstudied especially mismatch in N fertilizer application and increased feeds production. The need to understand the effects of the production practices in pasture land GHG emissions and the determination of environmentally friendly practices is the thrust of this study. Key findings Taken together, our findings do not show any significant effect of different soil fertilizers on <i>Brachiaria brizantha</i> cv. <i>xaraes</i> yields. This could partly be attributed to the short study period of eight months in a newly established area. Furthermore, the soil had been ploughed before grass planting, which could have mobilized N and other nutrients from soil organic matter mineralization and therefore might have masked a potential fertilizer effect. Whether fertilizer effects become more clearly distinguishable in the long term requires long-term measurements. Concerning soil GHG emissions, the findings have shown that at the applied fertilization rate, organic fertilizers did not increase soil N₂O emissions in this tropical site, indicating a potential option for low-emission forage grass production in SSA.

Climate change phenomenon has far-reaching effects on livestock particularly fodder/pasture production. There is an urgent need to develop climate-SMART agriculture approaches to salvage the situation.



The quantity of greenhouse gas emissions from soil in tropical Africa are exeragerated and this calls for researchers to conduct empirical measurements from the field. This will provide evidence-based results on the levels of GHG emissions from tropical Africa.