

## ***Interactive comment on “Soil Denitrifier Community Size Changes with Land Use Change to Perennial Bioenergy Cropping Systems” by K. A. Thompson et al.***

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General comments: This study presents valuable data to evaluate whether the growth of perennial grasses for bioenergy purposes positively or negatively affects N<sub>2</sub>O emissions compared to conventional crop rotations. Furthermore, the article also provides interesting results on biomass production with different agricultural practices and their (non-)effect on the short-term evolution of soil organic carbon. The strength of this work is the acquisition of data at the field scale within a well-designed experimental plan, and over different seasons and years. The discussion section is interesting, as authors try to contextualize all results according to a well updated literature.

Although it would have been interesting to get additional data on different parameters  
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(e.g. total N concentration in soil, estimation of biomass residues returning to soil for each crop), it is clear that the experimental work was already considerable here and that the authors have managed to extract the best information from their dataset. The most important results are summarized in the discussion and conclusion, both on practical aspects (recommendations to optimize miscanthus growth) and on a more process-oriented perspective (factors influencing denitrifying communities).

Specific comments: The sentence “large-scale LUC from corn-soybean to miscanthus may be suitable in variable Ontario conditions” may be removed from the abstract, as this is not the core of this paper and as this work only presents the results of one experimental site in Ontario.

Technical comments: Some abbreviations could be avoided, such as LUC and PG.

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