

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

Anonymous Referee #2

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General comments:

The manuscript from Thompson et al. is generally well structured, concise and informative. Results from their research, with higher biomass production from miscanthus but lower N₂O flux, have great potential for soil science, agriculture, economics and climate change mitigations if their results can be further validated in future studies.

As the authors mentioned in Conclusions, future measurements of N₂O fluxes and other relevant N cycling processes is critical in linking microbial communities to actual N₂O mitigation benefits during land use change. N₂O fluxes are highly variable, which raises my concern on how to interpret the information from soil denitrifier community size. Is 4 time samplings (May 9th, 2011; October 30th, 2011; May 2nd, 2012 and

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October 20th, 2012) enough to represent the link between soil denitrifier community size and N₂O fluxes, to differentiate seasonal changes?

Specific comments:

1, lines 61-65, confusing, need to clarify

2, lines 61-72, would it be better to add the reason why focus on N₂O?

3, line 97, there are only two N fertilization rates, 0 and 160 kgN ha⁻¹, “multiple” is not appropriate 4, line 115, add . after)

5, lines 119-120, N fertilization rates are confusing, “46-0-0” and “34-0-0” need further explanation 6, line 127, capital words in subtitles are not coherent

7, lines 155-156, strange position under 2.2 Soil sampling, suggest relocate to 2.1 Site Description

8, lines 234-235, no context for Ho

9, line 249, please explain “S. Ontario”

10, lines 243-256, authors refer to Roy et al. 2014 for result of environmental conditions instead of Fig.1. Are precipitation and temperature taken from Roy et al. 2014 ? If so, it would be better to also mention it in the Figure caption. If only soil moisture is measured, it would be better to describe soil moisture conditions instead of only mention that soil moisture “could also impact soil N and soil bacterial communities”.

11, line 275, . after p<0.05

12, line 339, “years 2 and 3”, please specify what 2 and 3 refer to

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