

Interactive comment on “Mitigating N₂O emissions from soil: from patching leaks to transformative action” by C. Decock et al.

C. Decock et al.

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Reviewer comment: This is a very interesting article which takes a wide-ranging look at the reduction of N₂O emissions. It is really nice to see such an interdisciplinary approach taken. I agree with many of the issues and concerns raised and have very few comments on this well written and structured manuscript. One addition that I think would be useful is the inclusion of a table with published values for N emissions from different conditions. Although there are many knowledge gaps there is also a considerable literature already published and such a table would help to illustrate and support many of the points raised in the manuscript.

Authors response: Thank you for the kind words of appreciation of our work. We

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carefully considered the suggestion to include a table on published values of N₂O emissions, but decided this is beyond the scope of our current discussion. We would like to refer the reviewer to recent review papers and reports, as cited in our manuscript (UNEP, 2013;Bouwman, 1996;Decock, 2014;Davidson et al., 2014;Stehfest and Bouwman, 2006;Snyder et al., 2014), and recognize that there are many more synthesis efforts on N₂O emission data that we did not explicitly cite. The main take-home message of our work is the need for interdisciplinary research to achieve real N₂O emission reduction targets, rather than putting concrete numbers on what's there and what's possible.

References

Bouwman, A. F.: Direct emission of nitrous oxide from agricultural soils, *Nutrient Cycling in Agroecosystems*, 46, 53-70, 1996.

Davidson, E., Galloway, J., Millar, N., and Leach, A.: N-related greenhouse gases in North America: innovations for a sustainable future, *Current Opinion in Environmental Sustainability*, 9, 1-8, 2014.

Decock, C.: Mitigating Nitrous Oxide Emissions from Corn Cropping Systems in the Midwestern US: Potential and Data Gaps, *Environmental science & technology*, 48, 4247-4256, 2014.

Snyder, C., Davidson, E., Smith, P., and Venterea, R.: Agriculture: sustainable crop and animal production to help mitigate nitrous oxide emissions, *Current Opinion in Environmental Sustainability*, 9, 46-54, 2014.

Stehfest, E., and Bouwman, L.: N₂O and NO emission from agricultural fields and soils under natural vegetation: summarizing available measurement data and modeling of global annual emissions, *Nutrient Cycling in Agroecosystems*, 74, 207-228, 2006.

UNEP: Drawing down N₂O to protect climate and the ozone layer. A UNEP Synthesis Report, United Nations Environment Programme, Nairobi, Kenya9280733583, 2013.

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