

Interactive comment on “Review of key causes and sources for N₂O emissions and NO₃-leaching from organic arable crop rotations” by Sissel Hansen et al.

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Received and published: 31 December 2018

The authors are grateful for that the referee has taken the time to work thoroughly with the manuscript and for the many good comments that are useful to improve the paper. The structure of the paper is by no means haphazard. To understand the connection between organic farming practise and the probability for N₂O emission or N-leaching, there is a need to first present the management factors characterising organic farming (section 3). The section 4 on Sources and mechanisms underlying N₂O emissions and NO₃ leaching are there to underline that the same mechanisms are truth for organic production as for non-organic production. The content and dynamic of soil mineral

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nitrogen (SMN) are influencing N₂O emission as well as N-leaching. To avoid repeating the SMN-story for the N₂O and NO₃ chapters, and because in many field investigates there are only data available on the SMN-content and not on any measured N-losses, we decided to have a separate chapter presenting SMN-content. The structures within the N₂O and NO₃ sections are built the way they are to answer the questioned raised. To easy the understanding for the reader, we decided to sum up each sub-section. To make it easier to follow the papers structure, we will add questions in the introduction that are better introducing the sections 3 and 4. Suggested new text. “We address the following questions for organic arable crop rotations: 1. Which managements do characterise organic arable crop production? 2. What are sources and mechanisms underlying N₂O emissions and NO₃ leaching? 3. What determines the dynamics of SMN concentrations, and when do high SMN concentrations occur? 4. What are the main drivers of N₂O emissions? 5. What is the contribution of single high N₂O emission events to total N₂O emissions? 6. When does NO₃ leaching mainly occur? 7. What are the most efficient measures for reducing N₂O emissions and NO₃ leaching?” To help the reader we will also introduce a table of contents. Section 3 and 4 are too long to be a part of the introduction as suggested by referee. The referee is missing tables and figures within the paper. This is understandable. We will come back to this and other issues raised by the referee.

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2018-455, 2018.

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