

# ***Interactive comment on “Review of key causes and sources for N<sub>2</sub>O emissions and NO<sub>3</sub>-leaching from organic arable crop rotations” by Sissel Hansen et al.***

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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 N<sub>2</sub>O 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 N<sub>2</sub>O emissions and NO<sub>3</sub> 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 N<sub>2</sub>O emission as well as N-leaching. To avoid repeating the SMN-story for the N<sub>2</sub>O and NO<sub>3</sub> chapters, and because in many field investigations 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 N<sub>2</sub>O and NO<sub>3</sub> 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 N<sub>2</sub>O emissions and NO<sub>3</sub> leaching? 3. What determines the dynamics of SMN concentrations, and when do high SMN concentrations occur? 4. What are the main drivers of N<sub>2</sub>O emissions? 5. What is the contribution of single high N<sub>2</sub>O emission events to total N<sub>2</sub>O emissions? 6. When does NO<sub>3</sub> leaching mainly occur? 7. What are the most efficient measures for reducing N<sub>2</sub>O emissions and NO<sub>3</sub> 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.

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