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Discussions

Interactive comment on "Subcritical water extraction to isolate kinetically different soil nitrogen fractions" *by* S. Sleutel et al.

Anonymous Referee #2

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Dear authors, The manuscript presented is correctly structured and written. The working hypothesis and objectives are clearly defined and explained. The methodological approach is adequately described. Results are thoroughly described and interpretation is clear and sufficient. Discussion is well documented and relationships among results are organized in a satisfactory manner. Some questions/comments raise: - The methodological approach has some merit and it was worth performing the study to assess the suitability of this fractionation scheme to predict N mineralization and bioavailability. However, results indicate that the methodology provides a rather limited contribution to our understanding on N processes. The authors indicate that the method "still hold potential", but this statement is hardly acceptable in the abstract of a scientific manuscript without further support from their results. The authors should further discuss the actual contribution of their study to the field. They suggest that "per-

haps SCWE holds potential to separate kinetically different SOM pools in well-drained upland agricultural soils". That might consitute a valid hypothesis for future research but needs to be supported with the current findings in the manuscript. - Pearson's correlations are not described in the "Statistical analysis" section (2.5). First, the reasoning for this selection needs to be fully clarified. Second, the authors need to indicate whether or not the criteria were met prior to run Pearson's: continuous variables, linear relationship, no significant outliers, variables normally distributed. Finally, the question is if the authors did consider (depending on the quality of their data) a different analysis, for instance principal components? Pearson's correlation is a rather weak tool to examine your data, and prediction strength based on such analysis is limited. A general linear model (GLM) seems a suitable approach and would allow you the evaluation of interaction effects, which might provide some relevant information from your data. For instance, when you look at Table 3, it is clear that interaction effect should be considered and analyzed. It is often the case that an interaction effect has a significant impact of the studied variable while the individual factors do not sign. affect the variable. - The factor aerobic/anaerobic has been poorly addressed and deserves a more detailed consideration. Table 4 is only mentioned once in the text (section 3.5) and never discussed. Water saturation affects organic matter solubility, and therefore it might indeed affect N bioavailability and mineralization. Such effect should not be neglected but rather integrated with other factors. - Figure 3: how many replicates (n=xx?), error bars are standard deviations of the mean values? Please clarify.

kindest regards