

## **Comment on soil-2021-124**

Anonymous Referee #1

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Referee comment on "Soil nitrogen and water management by winter-killed catch crops" by Norman Gentsch et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-124-RC1>, 2021

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The paper provides new and important findings on the importance and function of catch crops in relation to water and nitrogen management in soil. The presented topic is actual and relevant because intercrops effectively protect the soil from erosion and enrich the soil with organic matter which has a positive effect on the water and nitrogen balance of the soil. The manuscript is comprehensive and particular parts of the text are well-written.

The aim of the manuscript is clear and the hypotheses are well defined.

The Introduction provides an actual and sufficient literature review. I only recommend mentioning the importance of catch crops in protecting the soil from water and wind erosion.

L52: "Legumes are not as effective as other plants in N depletion..." - You could add reasons.

The chapter Materials and Methods is clear and detailed. However, I miss parcel size information (L95) and the way of sowing (by hand/by seeder/on surface/depth of sowing; L105). You should also provide information about the method of soil tillage after wheat harvest. Provide also the date of the catch crop plant biomass determination (L113).

L127: "Soil samples were taken..." - When? How many times? Does the Figure S2 provide

the data?

L148: "...samples at 10 time points..." – 10 time points or 9 time points (according to black dots in Figure S2)?

L93: Consider adding a table with the monthly precipitation values, the Figure S1 is less clear.

The Results are presented clearly and adequately described. The Discussion is also processed at a very good level. I only recommend adding information about volunteer winter wheat and weeds.

Technical corrections:

L132 and 133:  $100 \text{ cm}^{-3} = 100 \text{ cm}^3$

Figure 2 to Figure 4: You provide units  $\text{g kg}^{-1}$  for the figures but  $\text{mg g}^{-1}$  in the text (L211 to L222)

L216: "Clover...as bare fallow (Fig. 3b)." = Fig. 2

Table 2: In the column "05 Dec 2018" are not only small letters

Figure 5, Figure S1 and Figure S2: You should use the English names (abbreviations) of the months.

References: Check notation of literature sources (e.g. missing journal titles, abbreviated/full journal titles)