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Comment on soil-2021-129

David Hobson et al.

Author comment on "The effect of tillage depth and traffic management on soil properties and root development during two growth stages of winter wheat (*Triticum aestivum* L.)" by David Hobson et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-129-AC2>, 2022

The manuscript addresses the influence of tillage and traffic management on soil properties and root development. It has a good level of detail and it fits nicely with the topic of the journal. The overall structure of the paper is good, however, there are some concepts that need to be more clearly defined.

Authors: On behalf of authors, I would like to thank Referee 2 for his/her time, helpful and constructive comments on our work.

Abstract: I think it should be better stated which factor is more important management wise and its consequences.

Authors: Suggestion accepted. The management systems between traffic and tillage are highly inter-related. We will improve the message in the next draft to clearly represent management approaches and consequences.

Introduction: The purpose of the paper needs to be rephrased as it's not clear they are assessing the influence of trafficking. The cultivation and traffic management description should be moved to methodology.

Authors: Thank you for your feedback. A full review of the introduction will be conducted to sharpen the focus on both traffic management strategies.

M&M: In my opinion, it would be important to add a description of the tillage history of the site. The traffic regimes need to be better defined specifying or justifying how the combination of deep tillage without trafficking is possible. It appears the concept of controlled traffic farming (CTF) is not mentioned again throughout the paper. Regarding the Soil Moisture Deficit Model, what are the inputs of the model? only weather parameters?. Why did the authors choose to transform all the data to be normally distributed instead of using a non-parametric test?

Authors: Agreed, the history of the site is an important component of tillage and trafficking trial work. We will add more details in M&M to improve the visibility of the treatments conducted. The inputs of the model include max and min temperatures, rainfall, windspeed (M/s) and sunshine hours per day. We chose to transform data that did not show normality. Each dataset was tested for normality before conducting any statistical analysis. Parametric tests have more statistical power, testing the mean of each dataset.

Results: In general, figures need substantial revision. Legends should indicate the meaning of the treatments as in figure 8 and the same format (sequence of treatments) should be kept throughout. Also, the description of the results seems confusing at times.

Authors: Agreed - We will revise the figures and improve on the consistency such as formatting.

Discussion: The discussion is too long and also it's a bit redundant as it includes some data that should go to results or be removed. I think it could be useful to split it into tillage or traffic management effects.

Authors: We will split the discussion section into two sections and thank you for your helpful feedback.

Conclusions: they should state better what the recommendations are from an agronomic point of view and also the reflection of whether it would be really possible to leave traffic-free zones and what the advantage would be instead of establishing Low-pressure tyre zones?

Authors: Point taken and we will amend.