SOIL Discussions

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Comment on soil-2021-125

Anonymous Referee #1

Referee comment on "Migration behavior of benzobicyclon hydrolysate and associated influencing factors in different agricultural soils" by Lang Liu et al., SOIL Discuss., https://doi.org/10.5194/soil-2021-125-RC1, 2021

Several grammatical and syntax issues are present within the manuscript, as well as many incorrect statements (e.g. mentioning non-significant results in the abstract and saying an increase in BH dosage and rainfall amount blocked BH migration in the abstract). These issues have not been outlined, however, in light of two major issues I have with the project design which makes me sceptical of the results and if cannot be fixed is reason to reject the manuscript.

1) The main conclusion of the manuscript is the ranking of four soil types in regards to the mobility of BH, and their susceptibility to leaching BH. However, only a single sample has been taken for each soil type and as such, there is no measure of variability within the soil types that would be necessary to make sweeping statements about the soil type as a population. Due to this, the conclusions like:

"Based on the mobility retention factor (Rf = 0.34–0.90), the mobility of BH in thin soil layers was ranked in the order Lixisols > Anthrosols > Ferralsols > Phaeozems"

would need to be changed to:

"Based on the mobility retention factor (Rf = 0.34–0.90), the mobility of BH in thin soil layers was ranked in the order ***S4 > S3 > S1 > S2***"

as you can only justifiably say that there is a difference between the samples as opposed to soil types.

2) The method indicates that 4 cm diameter by 30 cm cores were packed with 600 to 700 g of air-dried soil. A core packed with 600 g of soil would have an air-dried bulk density of 1.59 g/cm^3, while a core packed with 700 g would have an air-dried bulk density of 1.86 g/cm^3. Thus, cores have a potential variation of 15-17% in air-dried bulk density which would have significant impacts on the porosity of the cores, the dynamics of water and thus the dynamics of the solute. This issue in the method would make me sceptical of any of the results from the leaching experiments.

-Additional questions about the method were if the soil was uniformly dried? Was the water content of the soil at packing determined? Because variation in moisture content at packing can introduce significant artefacts especially when dealing with variable soils.