



EGUsphere, referee comment RC1
<https://doi.org/10.5194/egusphere-2022-270-RC1>, 2022
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Comment on egusphere-2022-270

Anonymous Referee #1

Referee comment on "Soil and crop management practices and the water regulation functions of soils: a qualitative synthesis of meta-analyses relevant to European agriculture" by Guillaume Blanchy et al., EGU Sphere,
<https://doi.org/10.5194/egusphere-2022-270-RC1>, 2022

I appreciated the opportunity to review this manuscript. The authors present a well written, easy to read synthesis that outlines the knowns and knowledge gaps around a complex topic. I commend them for finding ways to simply visualize a number of concepts -- different agricultural practices related to sustainable agriculture and their impacts on various components of water regulation. I would encourage the authors to consider a few additions to clarify their methods and results.

The statement in the methods (lines 109-110) is quite brief in regards to how data was extracted from the meta-analyses. If I am following correctly it appears the authors visually from graphs or quantitatively from tables if effect sizes were significantly above zero, below zero or were not different from zero, and then counted the n=value from these studies. It is not entirely clear to me how effect size is counted. Is this one per study (i.e. one effect size per MA?) or the total in the studies that were combined, and therefore 1 effect size = 1 field site embedded within one meta-analysis? I believe it is the latter. I encourage the authors to clarify. I also encourage the authors to consider if the language "increase, decrease, no effect" is the same as "positive, neutral, negative". The latter have a connotation that is assumed by the reader, while the former are (in my opinion) more descriptive of the actual effects. For example, a decrease in runoff, while "negative" in nature, could be perceived as a positive effect of a management practice.

Although I found the manuscript generally easy to read and follow, I believe that the short intro and methods section are incongruent with the very long results & discussion. I encourage the authors to review and look for opportunities to be more concise. For example the discussion of tillage is quite lengthy, and although it is interesting to cover some elements of yield impacts, tradeoffs, etc. I am not sure that lengthy discussion as to the paper. And further, although the introduction discusses/focuses on conservation agriculture, the practices outlined in the paper are far broader in scope. I encourage the authors to consider a slight reframing of why specific practices were selected to focus on in this analysis. I do appreciate that the selection was broad, as it allows for a quick visualization/comparison of what properties and practices are more widely studied, but

again think this decision needs more clarification.

I disagree with the authors final assessment in line 534 that continuous living cover reductions in SWS/recharge will outweigh increases due to carbon sequestration. While there may be concern of water limitations in drier climates, I do not believe the evidence presented supports this perception as there are few studies that look directly at this effect (judging by the gaps in evaporation and water content associated with the cropping systems practices). The benefits discussed in terms of soil physical improvements, plus benefits from carbon, with the uncertainties of rainfall variability and increases in precipitation in many places, even semiarid regions, make this assertion one that deserves more attention.

There is a small typo on line 112 - believe the first word in the sentence should be "We..."