

Response to Reviewers 3

1. Summary

Dear editor,

Thank you for the comments. We carefully checked and improved the manuscript, using green highlights in the manuscript where changes were made. We responded to reviewer comments, below, using red text.

Comments 1: The manuscript is dealing with interactive effects of heavy metal and pesticide in the soil matrix on Spinach plant growth behaviour and metal contamination. The proposed work is interesting and could be done in a better way. There are some loopholes which can be rectified later. However, authors have proposed that they have explored the role of biochar on interactive effect of Cd and pesticide molecules. Interestingly, Cd showed synergistic effect on pesticide mitigation and availability in the soil system. Though several studies have reported role of biochar is metal absorption, detailed mechanistic highlight has been presented in this manuscript. Also, the findings are presented well. However, the presentation of overall content, particularly introduction is not judicious. At present it is a lengthy section, rationale is not clear and the content seems to be repeated later. Overall, authors are advised to rethink on the manuscript and can result a revised manuscript. Please see pdf file for a few annotated comments.

A few sentences can be modified as annotated in the attached file.

Response 1: *Thanks for the comments. We have carefully checked and improved the manuscript. The possible degradation routes and interaction of the parameters were analysed and discussed again.*

Comments 2: do not repeat the words already present in the title and replace with other relevant keywords!

Response 2: *The key word of kasugamycin changed to pesticide.*

Comments 3: so KSM is a naturally occurring pesticide? or is it a biopesticide? and showed natural degradation pathway? or produced by bacteria?

So if it is naturally degradable and photocatalytically degradable, why authors have considered its degradation in presence of biochar?

I think authors should rearrange the introduction section to clearly present the rationale of the work and need of this study!

Response 3: *Thanks for the comments. Based on comments from previous reviewers, and Reviewer 3 comments, we have tried to better explain/justify this work.*

Comments 4: so soil with different treatment conditions were left as such for three years without any experimentation?

or leaching test of metal and pesticides or related studies have been performed meanwhile?

Response 4: *The boxes were originally used for a biochar – Cd study. Once that study was complete, we overlaid the KSM study on top of the original study. The soil physical and chemical properties and Cd concentration were checked before this experiment. The leaching test of Cd was*

not performed prior to the start of this experiment, but experimental results shows where Cd is located within the soil during the current study. Same with KSM, which was applied only during the current study.

Comments 5: why 5 cm depth differences were considered? because of estimating metal and pesticide movement in short distances? generally 10 cm differences are considered!

Response 5: *5 cm depth increments are used in plenty of studies. We actually used the 5 cm depth increment because of the KSM application, and attempting to tease out the soil zone likely most affected by KSM application.*