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Interactive comment on “Improvements in aggregate stability of recently deposited sediments supplemented with tea waste and farmyard manure” by B. Turgut and B. Köse

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Thank you very much for your kind comments on our manuscript. The following are our responses to your comments:

C1: Why we need to use organic matter for increasing the aggregate stability of sediments deposited in a dam reservoir? What is the main purpose for this? Why the authors selected this specific study area (dam reservoir) and not an agricultural landscape, where soil erosion can be a critical issue? Why in the study there isn't a comparison with real case studies characterized by different soil erosion rates and different soil organic matter?

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R1: This concern is a very valid one. In the first draft we did not clearly state why the sediments were selected as the study material. This concern was addressed in the introduction (page: 3, Line: 18-29).

“Aggregate stability was found to be over 40% in studies conducted over degraded soils (Hernández, et al., 2015, Khaliq and Kaleem Abbasi, 2015, Mukherjee, et al., 2014), and this is much higher in those found in studied RDS. Therefore, RDS can be considered as a special case of extremely degraded soils. In accordance, the practices that improve aggregate stability in RDS can also be suitable, and probably more effective, in improving extremely degraded soils. Although aggregate stability is improved mainly through the application of farmyard manure, fewer information is available on the effect of tea waste on aggregate stability. Thus, our hypothesizes were that (i) the aggregate stability would be improved by application of the tea waste, (ii) the effect of tea waste and farmyard manure on aggregate stability would be different, (iii) the aggregate stability would be influenced by the application rates and (iv) elapsed time after organic material application of both farmyard manure and tea waste would change the aggregate stability. It is expected that increased aggregate stability after tea waste application on recently deposited sediments (RDS) can improve the physical properties of degraded soils.”

Potential benefits of improving aggregate stability in RDS is addressed in the conclusion (Page: 7, Lines: 17-24).

“In practice the significance of the findings is two fold. First, in areas with steep topography such as Artvin, where new agricultural plots are created by terracing and suitable soil resources are very scarce for this practice, fine grained sediments can be a good source of plantation medium with added organic amendments. Both tea waste and farmyard manure are abundant in this region because of its proximity to tea plants and cattle-raising farms. Second, sediment accumulation reduces water storage capacity of dam reservoirs, and thus the benefits of a dam. Removing sediments from reservoirs for agricultural purposes can help in increasing the sustainability of the benefits

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expected from a dam.”

C2: Farmyard manure and tea waste are just two examples, what about the other supplements?

R2: In this study manure and tea waste were used. We were not able to test other organic matter sources due to limited space available in the greenhouse. In addition, these two organic matter sources are abundant and reachable in the region.

C3: the text presents several weak sections: the methodology section, the discussion and the conclusion are really poor and short.

R3: The discussion and the conclusion sections were revised.

C4: A location map of the study area is missed.

R4: A location map will be added accordingly.

Interactive comment on Solid Earth Discuss., 7, 2037, 2015.

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7, C1153–C1155, 2015

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