Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC3
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Comment on hess-2021-399

Anonymous Referee #2

Referee comment on "Rill Erosion on Slope of Spoil tips: experimental study of runoff scouring erosion in multiple times" by Yongcai Lou et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-399-RC3, 2021

Using a plot approach, this is a respectable work, as many others carried out on the same topic. Unfortunately, it is complicated to find an advance here concerning the recent literature; also, it is difficult to generalize the obtained results because of the limitations of the plot design and soil type considered. The limitations of the article that are mining the entire research at its basis are the following:

- it is not clear why only three slopes were considered and why those and not others;
- it is not clear why only three types of inflow rates (surprisingly not rainfall) are considered;
- the soil is clay loam; therefore, the entire work is soil type-specific (as however all the papers published on a similar approach)
- The real natural conditions where also vegetation play a role in soil erosion due to the roots are not considered, therefore the work is affected at its basis by a lack of representativeness of real conditions, and overall is affected by an "anthropogenic" setting of soil into a given plot. Differently, the approaches with natural soil, where also vegetation is present, with natural rainfall scenarios and more or less natural slope, are more representative of reality.

Overall, I don't question the analytical approach and the intention, which is respectable, and indeed the scientists involved in the work deserve some merit for their great effort. However, the work in its present form doesn't meet the high standard required for HESS, where too limited studies are not welcomed. Second, the work is too narrow and site-specific in its purpose, a fact that is given at the eyes of the readers an idea of a not representative analysis, therefore with findings impossible to generalize. I'm not against plot-approach, but I also recognize its limits (and these are many) when a plot is artificial / with manipulated soil. On the other hand, in the case of an established plot on natural soil (even covered by vegetation) respecting the real geomorphologic conditions (usually for these sites, few non-invasive fences and one outled/tank collecting water/sediment are enough to guarantee the experiment), the analysis is conducted with real rainfall conditions (not with forced inflow rate), even for one year.