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Interactive comment on “The fate of seeds in the soil: a review of the influence of overland flow on seed removal and its consequences for the vegetation of arid and semiarid patchy ecosystems” by E. Bochet

Anonymous Referee #1

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General Comments and recommendation: The paper is within the scope of the Journal. It is well written and understandable. The paper is an excellent review on the influence of overland flow on seed removal and its consequences for the vegetation of arid and semiarid ecosystems. This paper offers an updated conceptual model of seed fates and movements in and on the soil, reviews the seed removal by runoff and its Long-term and large-scale ecological implications, and discusses the directions for future research. This is a very interesting and useful review paper, which can help the relative researchers to know the general study progress in this field and find their own

C156

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Interactive Discussion

Discussion Paper



interested topics to study in the future. It will promote the studies on the seed removal by runoff and its ecological effects on the plant communities in regions with serious soil erosion and soil degradation. I strongly support this manuscript to be published on this journal as soon as possible. Nevertheless, some clarifications should be provided: Figure 1. “Relative number of papers “ is it need a “%”?

Figure 5. Should “. . . at the (a) slope scale and (b) patch” be “. . .at the (A) slope scale and (B) patch”? Because in the figures is A and B.

Page 3 line14: in “biotic of abiotic agents”, should “of” be “and” ?

Page 9 line 10: what does “these latter” mean?

Page 9 line23: For “the balance between seed inputs and outputs was positive”, the studies on the Loess Plateau region this manuscript mentioned here did not involved it, and the data could not support it. For some species may be true.

Page 10 line 13-19: “Jiao et al. (2011) and Han et al. (2011) described that 30–45, 46.9 and 20.4% of the seeds were moved from one site to another site inside a 1m² and 2m-long laboratory experimental bin at intensities of 50, 100 and 150mmh⁻¹ , respectively, without being exported outside the bin. Using the same experimental setup, Wang et al. (2013) measured an average distance of 157.5 cm corresponding to seed redistribution by runoff within a 2m-long bin which was longer than the length of the plots used by Cerdà and García-Fayos (1997) and García-Fayos and Cerdà (1997) to quantify seed loss rates.” Please note that these data obtained without the seeds moved out of the bin, just the seeds remained in the bin but moved from the original site to another site.

Page 12 line10-13: “The relevance of seed size and shape in the severity of seed removal by runoff were later corroborated under field conditions in the Chinese Loess Plateau (Wang et al., 2013)” Please note it was not under field conditions. The relevance of seed size and shape in the severity of seed removal by runoff were

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corroborated using the data obtained under rainfall simulation conditions. And the plant distribution was obtained under field conditions.

Page 13 line 15-19: "García-Fayos et al. (2010) found that the average susceptibility of seeds to be removed by runoff was lower for plant communities of species living on steep slopes than for plant communities developing in flat areas in a semiarid area of East Spain (but Wang et al., 2013 for a similar study in the Chinese Loess Plateau)." What does "but Wang et al., 2013 for a similar study in the Chinese Loess Plateau" mean? The relevant result from Wang et al., 2013 is: "Seed morphology resisting water erosion like biomass, extreme elongated shape, appendages, and mucilage segregation was useful for species to develop on eroded slopes. However, there was no uniform relationship between species distribution and seed removal by water erosion. Some species with seeds resisting water erosion prefer gentle slope to eroded slope, while some species with high seed removal can develop on eroded slope. Some species that distribute on eroded slope maybe mainly determined by plant strategies or soil surface characteristics."

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