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Comment

***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***

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Answer to Referee 1

First of all, I would like to thank you for your interest in the revision of my manuscript and for your helpful comments and suggestions that will serve to improve it. Hereafter, you will find a point-by-point reply to your comments that will be included in the next version of the manuscript.

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Point-by-point reply:

- Figure 1. “Relative number of papers “ is it need a “%”?”

Yes, it does. Following your suggestion, the unit (%) of the axis will be included after “Relative number of papers”.

- 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.

Yes, it should be. Following your suggestion, lower case letters (a) and (b) in the figure caption will be replaced by upper case letters (A) and (B) as indicated in the Figure.

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

In “biotic of abiotic agents”, the word “of” will be changed to “or” (I prefer “or” to “and”).

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

The term “these latter” refers to the factors previously mentioned in the sentence (i.e. scarce water availability for plants and high salinity). As it seems not to be clear for the reader, the term will be replaced by “these latter factors” which will avoid confusions.

- 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.

I have just re-read the papers of Wang et al. (2013) and Jiao et al. (2011) and you are right, their data do not support the statement that “the balance between seed inputs and outputs was positive”. Thus, this part of the sentence will be removed with no consequences for the main message of the sentence.

- 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 1m<sup>2</sup> and 2m-long laboratory experimental bin at intensities of 50, 100 and 150mmh<sup>-1</sup>

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, 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.

The two successive sentences mentioned are in agreement with your comment. The text states that Wang et al. (2013) measured distances of seed redistribution (that means seed movement from one site to another site) within the same 2m-long plots used by Jiao et al. (2011) and Han et al. (2011). It states moreover that the length of the plots used by Wang et al. (2013) to measure seed redistribution was longer than the length of the plots used by Cerdà and García-Fayos to measure seed loss. This emphasizes the idea that whether seeds are lost or redistributed may be a matter of scale, which is one of the main points discussed in section 3.1. I propose not to change this part of the text as it agrees with your comment.

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

This error will be corrected and “under field conditions in the Chinese Loess Plateau” will be replaced by “under rainfall simulation conditions for species living in the Chinese Loess Plateau”.

- 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

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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 big mass, 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.”

“but Wang et al. 2013 for a similar study in the Chinese Loess Plateau” means that the results of García-Fayos et al. (2010) about the significant relationship between the distribution of plants in eroded and non-eroded areas and the susceptibility of seeds to be removed by erosion were not confirmed by the results (related to this specific aspect) obtained by Wang et al. 2013 in China. Whereas García-Fayos et al. (2010) found that the average susceptibility of seeds to be removed by runoff was lower for plant communities on steep slopes than for plant communities developing in flat areas, Wang et al. (2013) found, as the referee states in his comment, that “there was no uniform relationship between species distribution and seed removal by water erosion” (also p.148, lines 15-17 in Wang et al. 2013). This justifies the use of the term “but” which means that the results of García-Fayos et al. related to this specific aspect (relationship between plant distribution in the field and seed susceptibility to erosion) were not confirmed in Wang et al. (2013). This part of the text will not be changed.

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Interactive comment on SOIL Discuss., 1, 585, 2014.

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