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Interactive comment on "The impact of soil preparation on the soil erosion rates under laboratory conditions" *by* A. Khaledi Darvishan et al.

Anonymous Referee #1

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The manuscript discusses about the effect of initial disturbance and artificially preparing the soil under rainfall simulation condition on the runoff and soil loss. The authors like to understand how much the runoff/erosion is influenced by soil disturbance/preparing treatment. This idea could be extended/expanded to understand the basic erosion processes such as splash rate before and after preparing soil. It is an attractive subject and I think the manuscript will bring many benefits to scientists who are interested in this subject.

However, the manuscript needs some improvements particularly in writing skills and adding explanations to clarify the methodology, findings and conclusions. My comments are shown on the annotated manuscript uploaded. Some important com-

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ments/recommendations are provided below:

1) Try to improve the manuscript title by substituting a better term instead of "soil preparation". I've given some suggestions inside the text. In addition, based on the recommendation 4, it is advised to emphasis on the specific conditions in the title too. A few titles were suggested just for brain storming (you may find them on the annotated manuscript).

2) The authors are not stable in using specific terms along their writing particularly for two treatments. While, they apply "before and after soil preparing" at the beginning of the paper, it is followed by using "disturbed and undisturbed" at the end part of the manuscript . It is highly recommended that they systematically be stable in using terminologies in the abstract, methods, results and discussion to avoid misunderstanding.

3) On the reasons why there is not any interaction between rainfall intensity and soil disturbance treatments (lines 223-225), I think all intensities are high enough to seal the soil surface. If low intensities (for example 20 mm/h) had been employed, most probably you would have found an interaction then.

4) In the lines 232-233, please make more elaboration on your recommendation. The results of this research are valid only for a natural cover (rangeland) and could not be extended to dryfarming which usually is under tillage/seed bed preparing practices every year. In addition, the slope length is not long enough to produce rills. Therefore, it would be better if you narrowed the scope of the manuscript to specified conditions.

5) In Table (1), It seems the rainfall duration is the summation of "time to runoff"+ 15 min. However, in the methodology, the duration has been mentioned 15 min. Please correct it. In addition, what is the reason to use different rainfall duration? Explain the reasons based on some references. Note that both runoff and erosion are influenced by rainfall depth and duration. Two suggestions are given in this case: a) To achieve an accurate runoff coefficient, the duration of rainfall should be considered equal. Since the runoff rate is almost constant in the last two "3 min.", you could recalculate it based

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on the longest experiment (15.74+15=30.74 min). b) If it is not possible, add a column to show rainfall volume in each experiment.

6) Figure (3) and Table (2) provide almost similar information. It is best if you discard one of them.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/7/C207/2015/sed-7-C207-2015-supplement.pdf

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Interactive comment on Solid Earth Discuss., 7, 885, 2015.