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## ***Interactive comment on “Potential effects of vinasse as a soil amendment to control runoff and soil loss” by Z. Hazbavi and S. H. R. Sadeghi***

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Dear Dr. Raúl Zornoza Universidad Politecnica de Cartagena SOIL Topical Editor, raul.zornoza@upct.es

December 27, 2015

Greetings;

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Referring your decision letter on my submitted manuscript (soil-2015-40) and encouraging me to revise the manuscript after addressing the comments and suggestions of the respected reviewer. Here, Please find enclosed the revised version of the manuscript entitled "Potential effects of vinasse as a soil amendment to control runoff and soil loss" by Z. Hazbavi and S.H.R. Sadeghi. All comments and suggestions of the respected reviewer have been addressed in the revised version as detailed below. The entire revisions were highlighted by red color in the manuscript. The acknowledge receipt of the same and informing me about the status of the progress in paper evaluation is much obliged in advance. Should you need to contact me, please use the address given above or in the manuscript.

#### Revision Notes 4

Response to respected Topical Editor (Dr. Raúl Zornoza) Received and published: 15 December 2015

Dear authors, Although the manuscript has been improved by the revision developed, there are still some points you have to address to accept the manuscript for publication. Please, see all my comments on the attached pdf. You have to focus on the statistical analysis results, and take in mind that if differences are not significant, it means that vinasse applications did not significantly affect soil loss and runoff. With this in mind, you have to rewrite your results and discussion as I propose directly on the pdf. I also suggest you to include the significant differences in your tables and figures so that the reader can easily interpret them. You will see that I directly modified the content of the manuscript on the pdf, and also wrote comments. I am looking forward to seeing the revised manuscript soon

Include a sentence or two explaining or hypothesizing why vinasse addition did not significantly affected runoff and soil loss. Ans. The following sentences were added to abstract as conclusion. "In conclusion vinasse addition as soil amendment did not significantly affected runoff and soil loss. It is may be due to the development of a

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water repellency phenomena that led to a decrease in the water infiltration, following an increase in runoff volume. The increased in the runoff depth was led to reduction in soil resistance to rainfall and runoff detachments and availability of readily transportable sediments.”

Shorten the length of this section Ans. The paragraph was shortened.

Shorten the length of this section Ans. It was shortened.

Include coordinates to locate the place Ans. (57° 11' E and 37 ° 29' N) was added to text.

Include the mean annual precipitation, the mean annual temperature and the soil type according to the World Reference Base (IUSS 2014) or USDA keys to soil taxonomy (Soil Survey Staff 2014). Ans. The following sentences were added to material and method section: “Main climatic zone of this area is a cold substeppic of Irano-Turanian zone (slight Mediterranean affinities). Annual precipitation varies between 200-230 and 450 mm. Very variable temperatures especially in winter, depending on altitude and latitude. In Iran, brown soils are common in Khorasan Province Based on World Reference Base reports (IUSS, 2014).”

Develop one-way ANOVA and the Duncan test to indicate if differences are significant. Only indicate maximum or minimum values if differences are significant. If they are not significant, just indicate that values are not significantly different. Ans. In this sentence for better understanding of the results we reported the minimum and maximum runoff that occurred in the study treatment. The results of ANOVA and Duncan test was added to table. The results was not significant. But if we state the all amount it will be repeat of the text and figures. To show the result differently, only the minimum and maximum runoff amount was reported here. However, in the previous primary manuscript the ANOVA and Duncan test results were given in a table, but based on the reviewer requests we delete this from the text.

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Use average values of the three replicates, do not use individual values of each replicate. Only show average values please. Rewrite using the average values. Ans. The average maximum and minimum runoff volumes were 18547.73 and 15940.03 ml m<sup>-2</sup> at 1.5 and 1 l m<sup>-2</sup> level of vinasse treated plots, respectively (Table 3).

Non significant differences mean that in practice, all treatments have the same value, and you cannot say that 0.5 and 1 L m<sup>-2</sup> showed lower runoff. The runoff was statistically the same for all treatments. Rewrite this sentence accordingly. Ans. The mentioned notes reported by respected Topical Editor was revised.

Would not be "accelerated"? According to Fig. 3, the commencement time for 1.5 is 1.5 min, and for control (0) is 3.5 min. I would write here: the addition of 1.5 l m<sup>-2</sup> of vinasse accelerated the runoff commencement up to X min, compared to control with commencement time of X min. Ans. Thanking you very much for this comment. You are right. The sentence was edited as following: "As it is seen in Fig. 3, the addition of 1.5 l m<sup>-2</sup> of vinasse accelerated the runoff commencement up to 1.53 min, compared to control treatment with commencement time of 3.42 min."

But 1.5 l m<sup>-2</sup> did not delay the commencement time, just the opposite. It accelerated the runoff, what means less water infiltration Ans. The sentence was revised as follow: "These results disagreed with previous studies . . ."

This should be "delayed the runoff cessation", since the time for cessation for 1.5 l m<sup>-2</sup> is 31 min, and for control is 30 min. I would write here: The addition of 1.5 l m<sup>-2</sup> of vinasse showed runoff cessation time of X min, which was delayed compared to the control (X min). Ans. The sentence was edited based on your suggestion.

Why maximum effectiveness? lower commencement time and higher cessation time involves higher time with runoff, which is negative since we aim at reducing runoff to increase infiltration. Ans. You are right. Our main objective from the maximum effectiveness in its negative impact on runoff yield. The sentence was revised as you are suggested.

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I miss a discussion explaining why the 1.5 l m<sup>-2</sup> accelerated the time of runoff commencement and prolonged the time of runoff. Hydrophobicity? Saturation of pores?  
Ans. The follow sentence was added to end of the paragraph. "In conclusion vinasse addition as soil amendment did not significantly affected runoff. It may be due to the development of a water repellency phenomena that observed during the experiment times led to a decrease in the water infiltration following an increase in runoff volume. In addition, saturation of pores may be another reason to verify not significant effect of vinasse to decrease the runoff, since vinasse partly fills up the voids of soil, and partly remains on the soil surface. You have to rewrite this entire section. You cannot visually assess Fig. 4 and explain the trends, and after making a long discussion, start a new paragraph saying that differences are not significant. If differences are not significant in any time of measurement, it means that you cannot say that vinasses efficiently decreased erosion loss. Focus on your findings. Please, include the statistics in Fig 2 and Fig 4 in each sampling time to know if at each time there are differences among treatments. For this, you can include letters, or include over each sampling point "\*" indicating differences and "ns" indicating "non significant differences". When you have this, write your results on the basis of the statistics. If differences are not significant, soil loss is the same for all treatments. You could however say here that there is a trend showing decreased soil loss with vinasse addition, but owing to the high variability, differences are not significant. Ans. This section was rewritten and necessary information include the letters which show the significant differences was added to Figs. 2 and 4.

but later you say that differences are not significant. You cannot include the results of ANOVA after this description. ANOVA is the basis for your writing. Ans. The paragraph was restructured.

not so clear since differences are not significant. It could be since we observe a trend.  
Ans. The paragraph was restructured and the ambiguous explanations were deleted from the text.

However, according to Fig 3, the addition of 1.5 L m<sup>-2</sup> vinasse accelerated runoff,

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and so it increased quick runoff. This is contrary to your previous findings. Ans. The paragraph was rewritten and the main revisions were done.

Maybe this could help you explain the lack of differences and the acceleration in runoff time. Ans. This note was used to conclusion of runoff section.

This could explain your lack of differences and higher runoff time for 1.5 vinasse Ans. This note also was added to conclusion of runoff section.

I do not understand what you mean with this. Rephrase or delete. Ans. The mention sentence was deleted.

You just said in the first sentence that vinasse did not significantly influence runoff and erosion. So, how can you say there that it can be used to reduce erosion and water loss? It is contradictory. Ans. Yes, vinasse application alone did not affected the runoff and soil erosion. But its compost can be examined for this purpose based on the explanation given in the text. The sentence was revised for better understanding.

Include the units besides the name of the property, not behind the number Ans. The suggestion correction was done.

Include the moisture content in % Ans. It was added to Table 2.

If vinasse is a liquid, how is it possible that units are expressed on the basis of a weight unit (g kg<sup>-1</sup>), instead of volum unit (g L<sup>-1</sup>)? Ans. To determine the organic matter based on the dry combustion method (MAPA, 1986), the organic matter obtained on g kg<sup>-1</sup>.

1. Instead of including the values of the three replicates, only include the mean±standard deviation. So, just include one row with the mean±SD 2. Include a new column at the right side indicating the F-value together with "ns", indicating non significant differences. Include in a table foot that ns stands for non significant. Ans. The necessary changes for Tables 3 and 4 based on your suggestion was done. Because of many of columns, F-value was added in a raw.

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Please, include the statistics in Fig 2 in each sampling time to know if at each time there are differences among treatments. For this, you can include letters, or include over each sampling point "\*" indicating differences and "ns" indicating "non significant differences". Ans. The letters was added to Figs. 2 and 4.

Delete this linear fitting. The response of the cessation time to the treatments is not linear as you can see. If you want, you can use some other expression such as quadratic etc to fit a better curve, but linear does not fit properly. Ans. The necessary edition was done.

The axis for cessation time must be remade. Include also seconds in the axis, since it is not correct to include three times the same numbers (30, 30, 30, 31, 31, 31, 32, 32, 32) Ans. The necessary revisions were made.

I do not believe the letters you used: - For commencement time: letters make no sense, why using so many letters? You can include a, bc, bc and c. - For cessartion time: How can be the time with 0,5 l m-2 "b" and also the time with 1,5 "b"? They are very different according to the figure. And cessation times for 0, 0.5 and 1 l m-2 are quite similar and have different letters (a, b, b). I do not believe it. Ans. The letter of commencement time were renamed. The results of Duncan test for cessation time were rechecked. It was correct.

Please, include the statistics in Fig 4 in each sampling time to know if at each time there are differences among treatments. For this, you can include letters, or include over each sampling point "\*" indicating differences and "ns" indicating "non significant differences". Ans. It was done for Figs. 2 and 4.

I hope the final emendations caused to consent the respected reviewers and made my paper well qualified for final acceptance and publication.

Sincerely, S.H.R. Sadeghi

Enclosure

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Please also note the supplement to this comment:

<http://www.soil-discuss.net/2/C648/2015/soild-2-C648-2015-supplement.pdf>

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Interactive comment on SOIL Discuss., 2, 767, 2015.

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