

## ***Interactive comment on “Ecological restoration and soil improvement performance of the seabuckthorn flexible dam in the Pisha Sandstone area of Northwestern China” by F. S. Yang et al.***

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First of all, we appreciate the referee for his/her careful comments very much. Some advices the referee has proposed can be taken by us. We feel, however, the other suggestions are not necessarily appropriate. It is reasonable that the referee have doubt with the comparison of the data and the way of discussion on the results. Due to the more measuring parameters in this paper, this paper has taken the different discussion way from the other papers. We need here to make the careful responses to the problems by the referee. Respective responses are as the following: (i) You compared the results found in the SFD in a reforested gully. Some part of your results

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talking about the contrasted gully, but you described them. Please clarify that for a reader. Reply: The main aim of this paper is to compare the results found in the SFD with those results observed in the contrasted gully; just doing so, it is able to indicate the effective effects of SFD. So, the description about them, we have given that in the sections of introduction and material and methods of this paper. If described them on purpose, we think it is not necessary and doing this will further add the length of this paper. (ii) In the Introduction: Careful with the citation order, in the text appear some errors -citation by chronological order-: line 26 in page 2805; line 7, 27 and 29 page 2806; line 18 and 21 page 2807. Probably you forgot some citation in the line 10 in page 2808. Reply: For the reference citation order, we roughly make the citation order according to the new and old of the publication of the references. However, for the consistence of all this paper, we decide to adopt this suggestion to make a citation order according to the chronological order. (iii) In the study area: You don't use capital letters in the name of the gullies and rivers: line 10. Reply: We think it is not necessary to use capital letters in the name of the gullies and rivers mentioned before, because the related gullies and rivers are not very famous in the world. Not like the Yellow River or Yangzi River, etc. in China, these rivers are very famous and well known in the world. The rivers mentioned in this paper are just the third or fourth tributaries of the Yellow River of China. So, we feel making the change is no sense. (iv) You forgot use a reference of citation in the line 16 in page 2809. Reply: Here, we do not forget using a reference. We think it is not necessary to give a reference of citation. Because here we just describe the objective and actual state this study area. It is objective fact. (v) In the line 23 in page 2809 you use ...0.04 (4 m vertical: 100 m horizontal)... I suggest to modify by 4%. Reply: We adopt the suggestion. In the next revision, we will modify the slope of 0.04 as 4%. (vi) The figure 4 doesn't show a SFD type, I suggest to modify it. Reply: Author doesn't make any classification or type for the SFD. The figure 4 only shows the growth state of the SFD after nine years. From the figure 4, the reader can understand the good growth of the SFD. We feel it is not necessary to modify it. (vii) About the Soil moisture contents It is a confusion

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for a reader because your period of measurements was 1996-2010 and here you talk about different statements. Reply: For the soil moisture contents, the measurements of soil moisture contents were indeed conducted in 1996-2010. And we measured the soil moisture contents for the study gully and the contrast gully for most of years not all years. Moreover, we always make a comparison of the soil moisture between the study gully with the SFD and the contrast gully without vegetation at the same time of year, although the years are not necessarily continuous or consecutive. Here, we think talking about them with different statements is appropriate. (viii) Clarify or remove this part Soil organic matter and nutrients was measured only in 2010? Reply: We think the section is very important, because this part reflects the effective melioration for the soil within the gully bed. Soil organic matter is the important index of soil quality. And, the accrument of soil organic matter and the improvement of soil nutrients are also very slow process. The soil quality cannot be improved in a short time or short term, which concerns of the interaction of the soil, the vegetation coverage, vegetation root system, and microorganism and etc. This is a complex process. In this paper, the SOM is conducted to measure in 2005 and 2006. And the soil nutrients are measured only in 2010. The indices of the soil nutrients are many, and the soil nutrients and the SOM are also slow process, so we think the measurement for them after a longer period is more significant, and the results of measurement more clearly show the discrepancies between the gully with the SFD and the contrastive gully. This also indirectly reflects the active effect of the SFD on the gully soil. For example, it is not evident for making a comparison after 2-3 years of planting the SFD. (ix) In this part, Determining of species diversity and vegetation coverage. Do you need explain better what mean because it is confuse for a reader. Reply: We think, in this part, it is not necessary to describe the definition of species diversity and vegetation coverage on purpose. These two concepts are well known and very common in the discipline of ecology. Generally, the ecologist and the related scholar or experts in environmental protection well know the concepts. For example, in an article, is it necessary for all the basic concepts referred to from the other related disciplines or fields to explain in

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detail? We think some unfamiliar concepts need to describe in detail, however, for some basic concepts well known by most scholars or experts are not necessary to explicate them on purpose, which would increase the tedious length of the paper. (x) Please I suggest to change (1), (2)... by i), ii)... In line 5-10. In results and discussion: Where is the discussion? The results are so confuse, because you talk about EG1 and WG6, or compared the reforested gully with the non-vegetated gully and you forgot to describe it. Reply: We think the modification is not necessary for changing (1), (2)... by i), ii)..., because the reader can understand the purpose of using the (1), (2), ..., . In the results and discussion, we have a few discussion parts after the comparison of some measurement indices, for instance, in the soil moisture, soil organic matter, and soil nutrients. We do not conduct a whole discussion for all measurement indices. The discussions on each measurement parameter are respectively distributed in each sub-part, which need the reader to carefully read and think about them. If some reader cannot carefully read through the paper, then one cannot perceive them. In addition, our results are clear. Although we once talk about the WG6, our emphasis is placed on the comparison of the vegetated gully and the contrastive gully, i.e. the EG1 and the non-vegetated gully. In the sections of the introduction and material and methods, we only simply referred to it, and its physical property is very similar to that of the EG1 in the respects of gully dimension, gully soil property, and gully bed slope, and etc. So, in the results and discussion, we certainly do not make a comparison between the WG6 and the contrastive gully on purpose. We only selected few SFDs within the WG6, please see the text lines 5-10, page 2810. (xi) You compared the SFD with different analysis but in different time and not all (table 1,2 and figures 6-10). Reply: We remind the referee that some our comparisons are conducted in the same time, and some other comparisons are made in different time. With respect to the comparison in different time, we have given more detailed explanation mentioned hereinbefore. We hope the referee to note that although some our comparisons are made in different time, the comparing time is indeed the same year and even in the very close months in a year. For the test of the longer period of improvement of the SFD on gully soil, it

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is appropriate that we make such a comparison in this paper, because the spanning time is longer. (xii) I suggest removed the figure 8d and 9b, because are confuse for a reader. Reply: We think the figure 8d and 9b should not be removed; on the contrary, they are very important for the readers to more clearly understand the variations of soil moisture and soil organic matter in the SFDs of 0#, 1#, 2#, 5#, 6# and the contrastive gully. If so, the readers are able to further understand the improving effects of the SFD on both the soil quality and an increase in soil moisture content in the Pisha Sandstone gully.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/6/C1254/2014/sed-6-C1254-2014-supplement.pdf>

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