

Response to Reviewers

Dear Prof. Nunzio Romano,

We have carefully revised the manuscript in view of the constructive and helpful comments from the reviewer as outlined in details below. The line numbers shown in the following questions refer to the last round of the revised version (hess-2023-257R-referee-report-1), and the line numbers shown in the response refer to the revised tracked manuscript.

Thank you very much for your effort on our manuscript.

Sincerely yours,

Prof. Dr. Gao-Lin Wu (on behalf of all authors)

E-mail: wugaolin@nwsuaf.edu.cn

Response to Nunzio Romano (Editor)'s comments

The editor has decided that minor revisions are necessary before the manuscript can be accepted.

Besides adjustments requested by the editor or referees, please check your manuscript carefully for typos, missing co-authors and their affiliations, terminology, updates of data in tables, or updates of variables in equations. All these have to be clarified with the editor and therefore have to be included before you submit your revised manuscript. Should your manuscript be finally accepted it will not be possible to include such rather substantial changes anymore when your manuscript is in final production (proofreading).

Response: Thanks for your effort. We also thank the reviewer for his critical and constructive suggestions. We addressed each comment individually (in blue for clarity) and integrated all the comments and suggestions in the manuscript. We have also corrected some other minor errors and typo.

Response to Veerle Vanacker's comments

Lines 1-2: can you rephrase the title

Response: The **title** of the manuscript has been revised to “Mixed-cultivated grasslands enhance runoff generation and reduce soil loss in the restoration of degraded alpine hillsides”.

Line 21: can you rephrase the expression

Response: The words “the stability of the local runoff amount” have been replaced with “local runoff” in line **21**.

Line 23: can you rephrase the expression

Response: We have revised the sentence as shown in lines **22–23**: “In this research, runoff plots were established to investigate the impact of three mixed-cultivated grasslands, each ...”.

Line 39: can you rephrase the expression

Response: The words “To boost the benefits of grassland restoration” have been replaced with “To improve the effectiveness of grassland restoration” in line **36**.

Lines 60–61: Can you use the same units -> t/km²/month or year?

Response: Done. the revised text with consistent units of t/ha/month as shown in lines **52–55**: “For example, in the Swiss alpine uplands, water erosion ranges from 0.14 to 1.25 t ha⁻¹ month⁻¹ according to...”.

Line 66: and decreased (?)

Response: The words “while decreasing” have been replaced with “and decreased” in line **59**.

Line 77: You can also refer here to a regional review that was recently published for alpine regions:
10.5194/soil-8-133-2022

Response: Thank you for your kind suggestion. We have added the reference as shown in line **68**.

Line 103: delete “such as”

Response: We have erased the words “such as” in line **93**.

Line 111: See also work by: 10.1051/agro:2007062; 10.1002/esp.447; 10.1016/j.catena.2012.12.012

Response: Thank you for your kind suggestion. We have added the references as shown in lines **100–101**.

Line 129: meadows

Response: The word “meadow” has been replaced with “meadows” in line **118**.

Line 135: delete

Response: We have erased the words “in alpine meadow hillslopes” in line **125**.

Line 159–160: can you rephrase the expression

Response: We have revised the sentence as shown in lines **143–145**: “Here, we present novel research to examine the ability of cultivated grasslands to regulate runoff and soil loss and evaluated the effect ...”.

Line 262: filter paper (30–50 um)?

Response: I am sorry maybe a misunderstanding exists. To avoid misunderstanding from the readers, the words “filter paper (30–50 um)” have been revised to “with a pore size of 30–50 μm ”, as shown in line **242**.

Lines 289–290: rephrase

Response: We have corrected the typos in line **269**. In addition, the term "cutting" appears redundant, so we have removed it, as shown in line **270**.

Line 390: can you rephrase the sentence?

Response: We have rephrased the sentence, as shown in line **365**: “This finding is similar to that of some previous studies (Liu et al., 2019; Liu et al., 2022).”.

Line 399: Association between variables is not necessarily causal evidence

Response: We have erased the sentence, as shown in line **374–375**.

Lines 405–407: can you rephrase the sentence?

Response: We have rephrased the sentence, as shown in lines **380–382**: “The seeding method of plowing led to a disruption of soil structure, resulting in increased soil loss in the three mixed-cultivated grasslands during the initial stages of planting.”.

Line 436: can you rephrase the sentence?

Response: We have rephrased the sentence, as shown in line **412**: “Grass combinations with different morphological characteristics can effectively reduce soil loss (Liu et al., 2022).”.

Lines 456–457: delete

Response: We have erased the words “the function of reducing” in line **431**, as well as the word “reached” has been replaced with “reduced” in line **432**.

Line 467: rephrase

Response: The words “need to be monitored” have been replaced with “need to be conducted and monitored” in line **442**.

Line 474: Can you give here a reference to the place of purchase, and the year of purchase

Response: Done. We have added the place of and the year of purchase, as shown in line **451**: “... respectively, in Xining, Qinghai Province, in 2019.”

Line 483 surface soil

Response: We have placed the word 'surface' after 'soil', as shown in line **458**.

Lines 489–490: improving root and soil cohesion?

Response: Yes. The words “strengthening the sloping soils” have been replaced with “improving root-soil cohesion”, as shown in line **463**.

Lines 490–492 Soil protection or protection of the grasslands? Can you clarify?

Response: Thank you for your kind suggestion. To avoid misunderstanding from the readers, the sentence has been rephrased as shown in lines **464–466**: “To guarantee that mixed-cultivated grasslands can perform the aforementioned functions, protective measures should be implemented during the initial planting stage to support their healthy growth.”.

Line 492: different but

Response: We have added the words “different but”, as shown in line **467**.

Line 495: and composition

Response: We have added the words “and composition”, as shown in line 470.