

Response to Jesús Rodrigo-Comino (RC2) to

preprint egusphere-2024-2504: "Effects of moss restoration on soil erosion and soil water content in a temperate vineyard"

Thank you for taking the time to evaluate our work in detail and we are glad about the overall positive assessment. Your constructive comments provide a strong basis for significant improvements to our manuscript. We have answered your comments individually in the table below and will also incorporate them into our manuscript.

Reviewer comments	Authors responses
<i>"Thank you for submitting your manuscript for review. I found the paper to be interesting and novel, offering a valuable contribution to the field of vineyard management."</i>	Thank you very much for the overall positive evaluation!
<i>"I have included some comments in the attached PDF to help you strengthen your well-written manuscript."</i>	Many thanks for this detailed review and for providing the comments in the text, which made it easier to incorporate them. You can find the answers to these specific comments in the attached PDF.
<i>"1. Rainfall Simulations: Please consistently refer to "experiments" when discussing rainfall simulations."</i>	We now consistently refer to "rainfall simulation experiments" in the manuscript.
<i>"2. Climate: Given the limited timeframe of your data, I recommend avoiding broad generalizations about climate."</i>	We fully agree that the data period we have chosen is far from sufficient to talk about climate. Therefore, we now consistently refer to "weather conditions" instead.
<i>"3. Vineyard-Specific References: Consider including more references related specifically to vineyards in your discussion, particularly when comparing your results to those of forests. There is a wealth of literature on rainfall simulation experiments with different soil management practices and countries."</i>	Thank you for your suggestion. We agree that incorporating more references specific to vineyards would strengthen the discussion. To address this, we have already reviewed additional literature on rainfall simulation studies in vineyards across different countries and under various management practices. We will incorporate these references into the discussion section, highlighting similarities and differences in sediment discharge, and surface runoff compared to our study.
<i>"4. Visual Elements: Please include photos of the vineyard, a map, and a detailed soil description (using English terms)."</i>	We included a localisation map and photos of the vineyard in different seasons (see Figure 1 below). Furthermore, we added Table 1 with the general soil characteristics of the two soil horizons identified and translated the soil type Rigosol (German classification) to a Mollic Anthrosol (Relocatic) using the IUSS Working Group WRB (2022).
<i>"5. Rainfall Simulation Frequency: It would be helpful to justify the decision to conduct only three rainfall simulations in a single year. Some readers may question the representativeness of this data. If you used a large-scale rainfall simulator, please provide</i>	In total, we conducted 36 rainfall simulations at three measurement times in one year. This means each rainfall simulation experiment comprises 12 individual rainfall simulations. The decision to conduct three rainfall simulation experiments in a single

photos and explain the logistical challenges that may have limited the number of experiments. I perfectly know them, but not all readers must be familiar with this."

year was influenced by practical and logistical constraints, so the scope of the experiments was adapted to the time, equipment and personnel available. Our scientific idea behind this decision was to measure the influence of vine foliage on soil erosion (see lines 144-145 of the original manuscript). However, as the moss mats had not yet fully established themselves in the vineyard in June, as we had originally expected, we carried out an additional rainfall simulation experiment in October. To provide readers with more clarity, we will include photos of the rainfall simulator and a more detailed explanation of its design and operation.

Figures and Tables

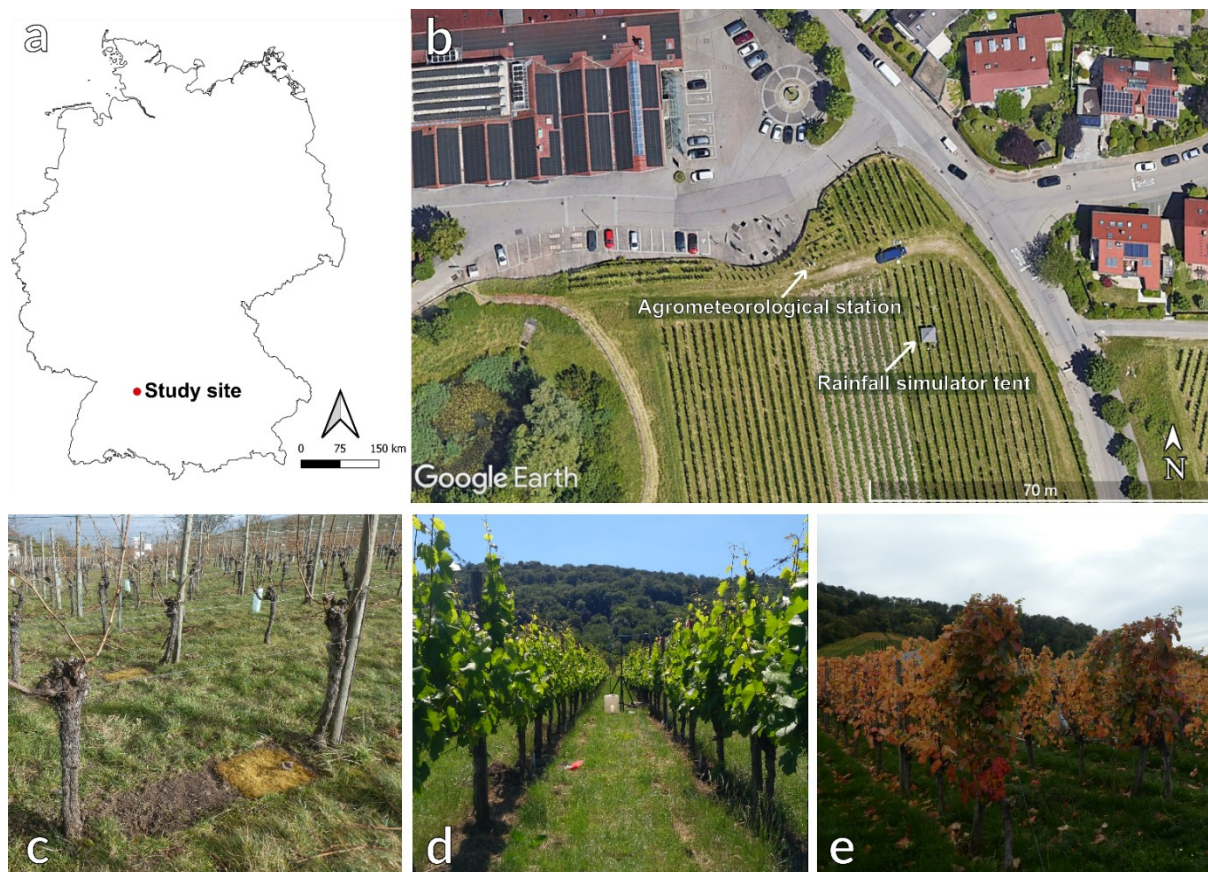


Figure 1: Location map and overview of the study site at different seasons. (a) Location of the study site in southwestern Germany (© GeoBasis-DE / BKG 2024 (data modified)). **(b)** Google Earth aerial photo of the vineyard with locations of the rainfall simulator tent and the agrometeorological station (© Google Earth 2022 Image Landsat / Copernicus). **(c)** Installation of the moss mats on February 17, 2022. **(d)** The vineyard during the 2nd rainfall simulator experiment on June 15, 2022. **(e)** The vineyard during the 3rd rainfall simulator experiment on October 24, 2022.

Table 1: General soil characteristics at the study site.

Soil horizon	Sand (%)	Silt (%)	Clay (%)	Texture	pH (CaCl ₂)	Total nitrogen (%)	Total carbon (%)	Soil organic carbon (%)	Soil bulk density (g m ⁻³)
0-25 cm	23.2	38.9	37.8	Clay loam	7.2	0.22	4.68	2.33	0.96
25-90 cm	23.8	42.3	34.0	Clay laom	-	0.09	3.76	0.81	-

References

IUSS Working Group WRB (Ed.) World Reference Base for Soil Resources. International soil classification system for naming soils and creating legends for soil maps, International Union of Soil Sciences, Vienna, Austria, 2022.