

Revised Manuscript Submission eguspere-2024-1663

Title: Differential responses of soil microbiomes to ureolytic biostimulation across depths in Aridisols (original title)

Authors: Kesem Abramov et al.

Dear Prof. Ramming,

We are pleased to resubmit our revised manuscript (eguspere-2024-1663) in response to the minor revision request. We thank the reviewer for their goodwill, thoroughness, and constructive feedback. Addressing the remarks and suggestions has resulted in an improved manuscript.

The following is a point-wise reply to Reviewer #1. Line numbers refer to the file with track changes mode.

This is the revised version of the authors' manuscript in which they present their results on the effects of ureolytic biostimulation in Aridisols. The authors took some effort to improve the paper and answer the reviewers' comments. However, there are still some slips and inaccuracies that could have been avoided. As a reviewer, it is especially irritating that there are discrepancies between your answers to my comments and the revised manuscript.

We would like to reassure you that our answers were not intended to irritate. Our sincere apologies.

Please see my detailed comments below (line numbers refer to the version with track changes):

Introduction

I. 58-59 I am still not sure about this sentence. Are you sure that chemo-physical soil surface stabilization is "often used" and if yes, in which way is it used that is relevant in the given context?

We rewrite the sentence for clarity and context: "In arid climates, chemical-physical soil surface stabilization is an alternative to plant cover (Durán Zuazo and Pleguezuelo, 2009) for mitigating soil erosion". Lines 57 – 59 in the revised manuscript.

I. 106 I suggest "on the microbiome level" instead of "on a microbiome level".

Thank you; we have rewritten the sentence. Line 107 in the revised manuscript

I. 108 Usually, "soil surface" does not refer to the top 1 meter of soil, especially not in the context with surface stabilization.

Thank you; we have rewritten the sentence. Line 109 in the revised manuscript.

Materials and methods

I. 126 In contrast to your answer to my former comment you did not indicate the range of the layers you later refer to. It is still not clear what you defined as "surface" - the uppermost 1cm or 2cm? And please indicate how you did the sampling.

Thank you for pointing that out. The sentence read “Within each site, soil was sampled from three depths: surface, topsoil at 5 cm, 50 cm, and 100 cm below the surface.” Whereas it should be “Within each site, soil was sampled from three depths: topsoil at 5 cm, 50 cm, and 100 cm below the surface.

The soil was sampled using a sterilized 2.75 in (70 mm) hand auger. Line 127 in the revised manuscript.

I. 134 Already in my first review, I asked the authors to stick to basic rules of writing - this includes to avoid abbreviations at the beginning of sentences. I did not ask to avoid abbreviations in general. I strongly recommend to avoid to begin a sentence with pH (see also I. 150).

Thank you. It is indeed the accepted grammatical form. We have rewritten the sentences starting with MICP or pH (the two most common acronyms in this manuscript).

Results and discussion

I. 187-190 I already remarked in my first review that you do not need this introductory part here. In contrast to your response ("...we rewrote the first paragraph") you just left it like it was.

I would like to sincerely apologize for our oversight in not revising the introductory paragraph as noted in your earlier review. The paragraph was deleted.

I. 197 It still should be ...than in the topsoil...".

Corrected as suggested, thank you. Line 195 in the revised manuscript.

I. 208-209 You do not analyse and/or discuss other factors that could have an influence here. Therefore, I still recommend that you attenuate your statement ("...our results provide evidence...").

Thank you. We rewrite to “....our results suggest there are functional consequences of mechanical disturbance to the soil microbiome.” Line 206 in the revised manuscript.

I. 218 What reference should "Gat, Ronen et al. 2017" be? In addition, there finds no reference from 2017 by these authors in your list of references.

Thank you for pointing out the year discrepancy. It should be “Gat, Ronen et al. 2016” as in the reference.

Gat, D., Ronen, Z., and Tsesarsky, M.: Soil Bacteria Population Dynamics Following Stimulation for Ureolytic Microbial-Induced CaCO₃ Precipitation, Environ Sci Technol, 50, 616–624, <https://doi.org/10.1021/acs.est.5b04033>, 2016.

I. 250 It should be either "In 100 cm depth" or "In the samples from 100 cm depth".

Corrected as suggested. We used “In the samples from 100 cm depth”. Line 246 in the revised manuscript.

I. 319 Again, you write something in your reply to my comments that is not in the manuscript. In the manuscript it is still "...that it had a more prominent influence" and it is not clear at this point what "it" does refer to.

We clarify the statement and rewrite the sentence to “Conversely, in the mechanically disturbed site, the disturbance itself appeared to play a dominant role, as evidenced by a delayed ureolytic response near the surface and a stronger activity in the deeper layers relative to two adjacent undisturbed sites”. Lines 329 – 331 in the revised manuscript.

I. 357 Basic rules of writing: write numerals up to ten as words.

Thank you. Corrected.

Conclusions

I. 363 It is misleading to refer to "...of an Aridisol" given the distance between your samples.

We change to "Aridosls".