



Přírodovědecká
fakulta
Faculty
of Science

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice

OPPONENT'S REVIEW ON BACHELOR THESIS

Name of the student: Sára Turková

Thesis title: Effect of different water regimes on microorganisms of nitrogen cycle in permafrost

Supervisor: Doc. Ing. Jiří Bárta, PhD

Referee: Mgr. Vojtěch Tláškal, PhD

Referee's affiliation: Soil & Water Research Infrastructure, Biology Centre CAS

	Point scale ¹	Points
(1) FORMAL REQUIREMENTS		
Extent of the thesis (for bachelor theses min. 18 pages, for masters theses min. 25 pages), balanced length of the thesis parts (recommended length of the theoretical part is max. 1/3 of the total length), logical structure of the thesis	0-3	3
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	3
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	2
Graphic layout of the text and of the figures/tables	0-3	3
Quality of the annotation	0-3	2
Language and stylistics, complying with the valid terminology	0-3	2
Accuracy and completeness of figures/tables legends (clarity without reading the rest of the text, explanation of the symbols and labeling, indication of the units)	0-3	3
Formal requirements - points in total		18
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	3
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	3
Discussion quality - interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	3
Logic in the course of the experimental work	0-3	3
Completeness of the description of the used techniques	0-3	2

¹ Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	3
The use of up-to-date techniques	0-3	3
Contribution of the thesis to the knowledge in the field and possibility to publish the results (after eventual supplementary experiments)	0-3	3
Practical requirements - points in total		26
POINTS IN TOTAL (MAX/AWARDED)	48	44

Comments of the reviewer on the student and the thesis:

The reviewed thesis written by Sára Turková focuses functional shift of the microbial community of diazotrophs and denitrifiers in thawing permafrost. Such topic is of great importance. Describing the impacts of climate change in remote, vulnerable areas is necessary not only to understand the complex processes connected with global temperature increase but also to broaden public awareness of the consequences of sustaining the world's carbon-emitting population.

I have noted my comments per line in the PDF file of the thesis. Here, I would like to summarize that individual parts of the thesis are well structured and it is visible that the text was written in a informed, thoughtful way. The text flows naturally and the transitions between parts are smooth. Graphical outputs are at the high level. Referencing is sufficient and mostly correct. The scientific results are sound and supported by correctly applied statistics. Actually, thesis in its current form could be submitted to a scientific journal without major changes in structure or graphics.

However, I see some points where the thesis could be improved. Besides the correct description of the sampling design, I would stress outputs like high *nifH* gene abundance and missing *nosZ* in discussion and conclusion. These ecologically relevant outputs and main objectives of the thesis are listed, but discussion contains also obvious statements about limitations of DNA-based approach which somehow distracts from the topic of nitrogen cycling in permafrost.

None of my comments and questions raised stand in the way of a successful acceptance of the thesis. Therefore, I recommend the thesis for defense with the grade excellent.

Suggestions and questions, to which the student has to answer during the defense.

I have three additional questions:

1. Is there any hypothesis why incomplete denitrification should be performed by community of denitrifiers in thawing permafrost? Is there any selection pressure to not perform last denitrification step in such habitat?
2. Do you have any explanation why some bacterial taxa are missing in DNA-based data but are present in RNA-based data (Nitrospirota, Acidobacteria). Taxa present in RNA-derived data should be just subset

- of total community.
3. Can you think of a positive biological/ecological effect of thawing permafrost? Something that could give us hope?

Mistakes, which the students should avoid in the future:

I was missing clear and detailed description of experimental design (number of samples, depths) and description of sampling technique in correct section of the thesis. Further, text contains only few referencing errors, some typographic errors and minority of factual errors. I suggest to keep in mind what should be the main message of the thesis all the time during the writing and to format the critical parts of the text accordingly.

Conclusion:

**In conclusion, I
r e c o m m e n d
the thesis for the defense and I suggest the grade excellent.²**

In Ceske Budejovice, date 6.6.2022

signature

² You can suggest a grade, which can be modified during the defense based on the presentation. However, if the reviewer is not present at the defense, the grade will not be counted. Grades: excellent (1). Very good (2), Good (3), Unsatisfactory/failed (4).