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: **Hanna Angster**

Thesis title: The effect of cutting and fertilization under controlled conditions on photosynthesis and plant growth of two wet grassland species (Carex canescens and Phalaris arundinacea) representative of the competitive and conservative plant functional types

Supervisor: **Keith Edwards**

Referee: Tomáš Picek
Referee`s affiliation:

	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	2
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	2
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	3
Graphic layout of the text and of the figures/tables	0-3	1
Quality of the annotation	0-3	2
Language and stylistics, complying with the valid terminology	0-3	3
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	2
Formal requirements – points in total		15
(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	2
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	2
Logic in the course of the experimental work	0-3	2

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

Completeness of the description of the used techniques	0-3	2
Experimental difficulty of the thesis, independence in experimental work	0-3	2
Quality of experimental data presentation	0-3	2
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	2
Practical requirements – points in total		20
POINTS IN TOTAL (MAX/AWARDED)	**48**	**(35)[2]**

Comments of the reviewer on the student and the thesis:

Annotation

You say in the end of annotation: "We will show that the photosynthesis capacity can differ within the same plant species under different management regimes (water and nutrition level)." This is not true, you investigated the effects of fertilization and cutting on the plants, not the water level.

Introduction (literature review)

The chapters 1.3 and 1.4 about photosynthesis and chlorophyll content contain general information about the process of photosynthesis and about methodology of IRGA measurements. I would expect that these informations will be more concrete/specific, focused on plant functional plants studied and put into connection with the plant functional types studied, or the effect of fertilization and cutting on plants and on photosynthesis would be explained here etc. These informations I am missing in the literature review.

Methods

I miss several informations: 1) where you took the plants for the experiment, if they were planted from seeds or you brought them from the field etc., 2) What was the water level in the mesocosm – constant, x cm bellow soil surface or varying during the season etc... 3) Number of replicates per each measurement/treatment

Results

Fig 2a and 2c If you want to show time course, you should show time on x axes and apply the real time scale, not the number of sampling (counting day)

Fig 2a The variable you are showing in this graph is rather "change of number of shoots" not "number of new shoots". This is because there are negative numbers for sampling no 3, which is not possible, if you speak about "number of new shoots". There can either be several new shoots or no new shoot (zero) but not minus several new shoots – this is nonsense.

Fig 2b – the points in the graph should not be connected with the line like in previous graphs – this is not time course as in previous graph

Fig 6b – this is not good example of time course, I think, because the values for different treatments measured during the day are shown. How can you know, that e.g. the cut fertilized

[2] Enter the number of points awarded.

treatment would show lower value earlier during the day, when it was measured only in time 15:00 and not earlier? If you wanted to show the time course of Phi2, why you did not measure the same plant of the same treatment several times during the day?

Conclusions

The second sentence is not clear: “In July, fertilized plants of both species showed significantly higher net photosynthesis rates as well as a higher number of new shoots and plant height.” Not clear, to which treatment or time you compare the higher rates of fertilized plants : higher rates than for unfertilized plants or higher rates than for plants measured in August or anything else?

Suggestions and questions, to which the student has to answer during the defense. Mistakes, which the students should avoid in the future:

Questions to the student:

1) Where were the plants used for the experiment taken from? Were the plants planted from seeds or you brought them from the field? What would be the difference, if you use plants grown from seeds and plants taken in the field (like part of tussock)?
2) Would be the water level important factor affecting the parameters you measured? What was the water level in the mesocosm – constant or fluctuating, how deep bellow the soil surface or were the plant flooded?
3) How many replicates were used per each measurement/treatment? What would be optimal number of replicates to get reliable results?
4) The last sampling date was August 8th. You speak about this date like about the end of growing season. Do you think, this is really end of the growing season? If the sampling goes on, e.g. till October, how would the plants look like and would be the differences between the plants the same as in the period you did your experiment?

Recommendations for future:

1) To focuse your literature review on problematics you are solving and not to write too general text, not repeat information you can find in the books or on internet easily.
2) If you want to say, that something is nutrient richer, or something is higher, lower etc. it should be followed by “than ....” or “as compared to ....”. Such sentences are often found in the whole thesis, e.g. in Introduction, on page 2: “Nutrient-richer habitats give ideal condition for the growth of competitive plant species.” Nutrient-richer than ...? The second sentence: “A higher nitrogen content in these tissues results in faster decomposition and nutrient turnover rates.” Higher N content and faster decomposition than in case of .... ? Also one such sentence in Conclusion, as mentioned above.

Conclusion:

In conclusion, I r e c o m m e n d

the thesis for the defense and I suggest the grade Very good .[3]

In **České Budějovice** date **9.6.2023**

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signature

[3] 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).