

30.08.2022

Dear Editor in Chief of the Journal Horticulturae,

Please find the enclosed revised manuscript which is related to the topic of "Crossbreeding Rootstocks Improve Nitrogen Efficiency of Grafted Watermelon by Inducing Leaf Physiological and Root Morphological Responses", by Abdullah Ulas.

I would like to thank both reviewers (reviewer1 and reviewer2) for the critical reading of our manuscript and the constructive comments. We have carefully revised the manuscript on the suggested lines of two reviewers by bolding the text into blue (reviewer1), and yellow (reviewer2) colours. Furthermore, to keep the originality for our manuscript, all text sections were re-checked and rewritten in terms of English grammar and spelling rules. Furthermore, the originality report by iThenticate was attached.

The author confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. The author declares no potential conflict of interest.

The author believe that our findings could be of interest to the readers of the Journal Horticulturae. I hope that the editorial board and the reviewers will agree on the revised manuscript and also interest of this study.

Thank you for your consideration of this manuscript.

Sincerely yours,
Abdullah ULAS

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Response to Reviewer Comments (Reviewer2)

We thank the reviewer for the critical reading of our manuscript and the constructive comments. We have carefully revised the manuscript on the suggested lines. In the following we include our responses in bold yellow color for each comment of the reviewer2 at below and also in the text of the revised manuscript.

Reviewer Comments

The author presented a manuscript Crossbreeding Rootstocks Improve Nitrogen Efficiency of Grafted Watermelon by Inducing Leaf Physiological and Root Morphological Responses. Although the manuscript has all the precedents for an interesting paper, further deep analysis and discussion are lacking. Therefore, my recommendation is that the manuscript cannot be accepted for publication as it stands.

My first concern is about the methodology and the depth of the discussion.

Point 1) The author indicated that “Between complete renewals of the nutrient solution (7 days intervals), all nutrients were replaced when the N concentration of the nutrient solution in the 3.0 mM N rate pots fell below 0.3 mM”, Why wait until the high nitrogen treatment reaches the level of the low nitrogen treatment?

Response 1) To see the apparent effect of nitrogen on plant growth under limited N condition (low N), we don't give any additional nitrogen. Because, they grow in 8 L pot which contains quite sufficient nutrients. If we don't consider the N concentration of high N pots (3.0 mM), the plants don't show any nitrogen deficiency symptoms at low N. Moreover, this is our standard method which is regularly used in each hydroponic study that were published.

Point 2) The author also indicated, “CaSO₄ was applied (1.35 mM) only into the low N treatment”, without indicating whether or not a chemical balance study of the nutrient solution was carried out. What happened with sulfur in the nutrient solution?

Response 2) In nutrient solution experiment the balance between cations and anions is an important factor. However, sometimes it is impossible to create an exact balance between both cations and anions in nutrient solution due to applied main treatment. In this study, main treatment was nitrogen and Ca(NO₃)₂ was used as main N source. If we hadn't applied 1.35 mM CaSO₄ to the low N, we would have a major calcium deficiency in low N treated plants. Therefore, the applied sulfur (SO₄) at low N was not considered in this study. In fact, we could have solved sulfur problem by applying

calcium sulphate at both N supplies with together ammonium nitrate (0.3 and 3.0 mM N) as the N source, but due to toxic risk of ammonium we could only apply $\text{Ca}(\text{NO}_3)_2$.

Point 3) For photosynthesis measurement, why use $1000 \mu\text{mol m}^{-2} \text{s}^{-1}$ for measurement?, if the plants grew to $400 \mu\text{mol m}^{-2} \text{s}^{-1}$?

Response 3) Previously, we tested the portable photosynthesis system (LI-6400XT; LI-COR Inc., Lincoln, NE, USA) in several configurations in our climate chamber. However, we found that device using without device artificial light and use only under room light ($400 \mu\text{mol m}^{-2} \text{s}^{-1}$) condition makes the measurement difficult and it takes a very long time. Our best and quick results were obtained under using with device artificial light ($1000 \mu\text{mol m}^{-2} \text{s}^{-1}$) and CO_2 ($400 \mu\text{mol mol}^{-1}$) condition. Therefore, in each hydroponic study we used this configuration.

Point 4) For photosynthesis measurements, why measure photosynthesis in the third and fifth week if the experiment lasted 6 weeks?

Response 4) At the beginning of the experiment plants grow slowly and thus the leaf area is too small for photosynthesis measurement. Therefore, first photosynthesis measurement was done when the difference in plant growth between low and high N usually exists (third week) in the experiment. To obtain more significant results between two N treatments second photosynthesis measurement was done at fifth week of the experiment. Since, one week after the first measurement the results could be similar as one week before. Therefore, we skipped one week and measured again at fifth week of the experiment.

Point 5) The author must specify at what time (day) measured with SPAD since the author indicates during the growth period!

Response 5) At the time of the growth duration, fully developed leaves of whole plants for every treatment were measured once a week for data of SPAD. All SPAD readings were carried out between 09:00 and 12:00 a.m.

*****Point 6)** The discussion is based only on comparing results with other publications, without suggesting or proposing some mechanism that explains the results obtained or why the authors are observing these changes in the measured parameters.

Response 6) The discussion section was re-checked and rewritten with explaining of some mechanism that explains the obtained results and also giving some suggestions. Also, explanations were done carefully why the observations on the measured parameters were carried out.

*****Point 7)** The conclusion should be improved and not summarize the results obtained.

Response 7) The conclusion section was re-checked and rewritten clearly in order to improve the content and to avoid repeating of the results.

Minor points:

Point 1) Some English language problems need to be corrected. For example, Objective line 10 “The aim of the study was to evaluated....”.

Response 1) The manuscript was re-checked and rewritten in terms of English grammar, spelling rules and word mistakes.

Point 2) Also, line 276 “The capable rootstocks that has vigorous root system improves enhance water and ion uptake from the soil solution, and transfer to aboveground plant parts. It is improves or enhance? It is have no has!

Response 2) The sentence in line 276 has been rewritten and the mistakes were corrected.

Point 3) Lines 198-202, please improve the sentence since it is very long!.

Response 3) The sentence in the lines 198-202 has been rephrased and shortened.

Point 4) Line 85, the first time this abbreviation is spelled, and then use NUE.

Response 4) The word mistake of “NUE” has been corrected and used as “nitrogen efficiency”.

Point 5) The author should add a figure to clarify the experimental design and measurements.

Response 5) Materials and Methods section was improved by re-checking and rewriting carefully. This will help to better understand the plant material, treatments, experimental design and measurements of the study.