**JEI Editor’s Letter**

**Manuscript:** Exploring Unconventional Growing Methods to Promote Healthy Plant Growth in Common Household Plants: Tagetes patula L. and Lepidium sativum

**Authors:** Erika Williams, Andrew Nguyen, Nguyen Ryan

**Scientific Reviewer 1: PhD candidate** **at** **Harvard University** with expertise in genetics and cellular biology

**Scientific Reviewer 2: Postdoctoral fellow at Emory University** with expertise in biology and health sciences

**Scientific Reviewer 3: PhD Candidate at Harvard University** with expertise in biology and cancer biology

**Decision: Accept pending Presentation Changes**

**General Comments from the JEI Editors and Scientific Reviewers**

*This section contains general comments written by both the JEI editors and the Reviewers. These comments do not contain any required/recommended revisions but instead are meant to convey the Editor’s/Reviewer’s opinion on the manuscript as a whole.*

**JEI Editor Team**

This manuscript addresses the need for more efficient and environmentally sustainable methods for growing crops, aimed particularly to backyard gardeners. This well-organized manuscript clearly lays out the hypothesis as well as the justification for each experimental group. The results are clearly analyzed and it is obvious that you have a clear understanding of your work, and how it fits with the literature. Below you will find notes from three reviewers and the editors about both required and recommended changes. Overall, you have done tremendous work on this project and we look forward to seeing it in the next round of reviews and eventually as a finalized JEI publication!

**Scientific Reviewer 1**

Great job! This manuscript was a pleasure to review.

**Scientific Reviewer 2**

Wonderful premise for your research and interesting introduction--nice choice of the "funnel" technique (broad intro to specific question) to set the stage well for your hypothesis. Good use of sources and references to previous literature throughout the manuscript. Well done with presenting genuine results--even if the data are not statistically significant, the information is still valuable and you did a great job of providing unbiased information and not trying to skew the results one way or another. Kudos as well for providing genuine assessment of your own limitations too. Great discussions and conclusions made using both your data and the work of others to enhance your understanding.

**Scientific Reviewer 3**

In general, I think it is a great idea to think about and work on a more sustainable lifestyle. Furthermore, you did a very good job in your introduction. You gave a very clear background and explained the relevance of your work. You also presented and explained your results very well.

**Science Comments**

*This section contains comments on the science, including experiments and analysis.*

**The authors are working towards identifying more sustainable growing methods for common household plants. Therefore, the authors treated marigold and garden cress plants with alternative growing methods and measured their growth. While the treatments had no effect on the growth of the marigold plants, the garden cress plants did benefit of some of the tested methods, including the deep water culture. I think the study is interesting and has relevance and should be published after a few modifications in the presentation and analysis.**

**Required Changes**

*We believe that these revisions must be made in order to publish in JEI. If any changes are impossible, please include an explanation in your cover letter.*

NONE

**Recommended Changes**

*We have compiled a list of recommended revisions that would help further improve the manuscript. These recommended revisions are not required for publication, but we strongly encourage you to seriously consider them. These revisions will further improve the scientific rigor of the manuscript.*

Results

* Because the authors discuss the significance between groups for all other parameters (ex., plant height at first bloom, average growth time, etc.) then this should be calculated and mentioned in Results for plant survival as well.

**Presentation Comments**

*This section contains feedback on the clarity of writing and the presentation of data.*

**The students provide a thorough but succinct background and history of agriculture to set up their research question, and demonstrate the importance of developing alternative growing methods. Six study groups were generated to compare the effects of plant growth using alternative methods, and no significant difference was observed between the groups using marigold seeds. The garden cress seeds generated statistically significant different growth between the DWC treated group and the control only. Most other parameters related to plant development yielded no statistically significant difference. Despite statistically insignificant results, the study was well-organized and clearly written; the discussion was thorough and the students performed excellent work overall.**

**Required Changes**

*We believe that these revisions must be made in order to publish in JEI. If any changes are impossible, please include an explanation in your cover letter.*

Introduction

* The fourth paragraph of the introduction should be added to another paragraph or developed more thoroughly; though it still provides valuable information, the two sentences don't stand on their own. General paragraph structure throughout the manuscript could be enhanced or formatted more consistently in length by combining some paragraphs and/or separating others.
* I think there can be an expanded section in the introduction about why chemical fertilizer wastes so much water (2 sentences only right now)

Results

* Some of the descriptions in the Results section (ex., the second paragraph) should be moved to the Methods section. The results should focus specifically on what we learned rather than the details of the methods.

Discussion

* The first sentence of the Discussion needs a reference.

**Recommended Changes**

*We have also compiled a list of recommended changes. These are not required for publication, but we strongly encourage you to consider them. These revisions will further improve your manuscript and show you examples of good scientific writing.*

Discussion

* Even if the results weren't statistically significant, some of the treatments (eggshells) showed a trend in improving the height of the marigold plants. There is a statistical concept called power which describes statistically how many biological replicates are necessary in order to reflect the population. Your experimental groups with only two replicates mean that the experiment is “under powered”. This is not a criticism of the work, but rather, you can mention this in the discussion to open the possibility, that had you had sufficient power, these trends may have been statistically significant. The authors should discuss these findings in the discussion section and could talk about the relevance of enough biological replicates for the experiments.
* There is a mention of trying other plant varieties in future work. I was wondering what is known about marigolds and garden cress that may support the results in this study? For example how their physiology and metabolism is different?

**Figure Comments**

*This section contains comments on the presentation of the data in figures and tables.*

**Required Changes**

*We believe that these revisions must be made in order to publish in JEI. If any changes are impossible, please include an explanation in your cover letter.*

* In your figure legends, especially the ones for the bar graphs, include the statistics that you report in the results section. It should include the statistical test you ran, the results, as well as a sentence with the conclusion that you can draw from that test.
* The error bars in your graphs look like the default error bars that are automatically added in excel. Be sure to calculate them yourselves and manually enter them to be sure that they are truly reflective of your data.
* In figure 4, include an asterisk to denote the statistically significant difference.

**Recommended Changes**

*We have compiled a list of recommended revisions that would help further improve the figures. These recommended revisions are not required for publication, but we strongly encourage you to consider them. These revisions will further improve the data visualization and aesthetics of your figures.*

* The authors could consider showing the individual replicates in Figure 3 and 4 to allow the reader to get a good image of the variation between replicates.