Dear Editor,

We are pleased to resubmit our manuscript, "Foliar nutrient uptake from dust sustains plant nutrition" (egusphere-2024-2531), following minor revisions. We sincerely appreciate the reviewers' time and effort in evaluating our work. Their insightful and constructive comments have helped us improve the manuscript significantly.

In response to the reviewers' suggestions, we have refined the citations, figures, tables, and bibliography, along with other minor improvements. Additionally, we have incorporated post-hoc p-values in Table 2.

Our detailed responses to the reviewers' comments are provided below in bold. The revised submission includes a tracked-changes version of the manuscript to facilitate the review process. All line and page references in our responses correspond to the tracked-changes document.

Thank you for your time and consideration. We look forward to your feedback.

l. 121: remove double period.

**Corrected accordingly (P4 L121).**

l.134: were applied as (not: in)

**Corrected accordingly (P4 L134).**

l.155/157: remove double caption; $CO_2$ (subscript 2); remove column "Replicates" and give info in the caption (the same in all treatments).

**R: Corrected accordingly (P5 L156).**

l.279: "P starvation did not reduce P concentration". Are you sure? -P concentrations are about 1/3 of the +P controls, which is a substantial difference. BTW: the missing statistics in Table 2 prevents any clear conclusion (see below).

**R: Thank you for pointing out this mistake. The sentence was indeed not clear. We**

**have revised the sentence (P9 L280-L282).**

l.293-301 (Fig.1): Please harmonize the use of upper or lower case for the labelling of panels, both within a Fig. (in Fig.1 upper case in the panels, lower case in the caption) and between the Figs. (mixed in Fig.1 and 2, lower case in Fig.3).

**R: Corrected accordingly (P11 L, P12 L).**

l. 297 (Fig.1): "… was significantly smaller." Smaller than what?

**R: Image was taken immediately after the dust application. (The actual amount of dust remaining on the plant leaves at the end of the experiment was significantly smaller than what is depicted in the picture image). (P12 L316-L317).**

l.301 (Fig.1): The exact meaning of the box plots is not explained. I assume that the central lines within the boxes denote the respective medians, as it is common for this kind of graphs. Furthermore, I am not convinced that the error bars actually denote standard deviations, as stated in l. 301. Standard deviations refer to the symmetric variation of data around arithmetical means. Since there is no symmetry in relation to the central lines, it can be concluded that means are probably not shown in the graphs. Please clarify (also in Fig. 2).

**R: Thank you for pointing this out – this was our mistake. We chose to represent the data using a box and whiskers plot, and here is the explanation: the box and whiskers plots represent the distribution of the data. The central line indicates the median, the edges of the box correspond to the 25th (Q1) and 75th (Q3) percentiles, and the whiskers span from the minimum to the maximum values. Individual data points (n = 5) are overlaid on the plot to illustrate the full distribution. We have updated the text accordingly for Figures 1 and 2 (P12 L316-L318, P14 L351-L353).**

L. 314-317 (Table 2): insert "," before "fertilizers".

**R: Corrected accordingly (P14 L325).**

Results of statistical analyses are missing (post-hoc tests indicating differences within columns). This is important because you refer to those differences in the text of your paper (see my comment above).

**R: Thank you for your feedback. In response to your comment regarding the missing results of statistical analyses, we have now added the p-values from the post-hoc tests to the table, indicating the differences within the treatments (P16 L367).**

l. 319: This header is still too interpretative. Be aware that this is still part of the chapter "results". In the following section you just specify differences between the two cultivars. The interpretation comes later in "discussion".

**R: We changed the header to: "Biochemical properties of chickpea varieties" (P17 L377).**

l. 386: "Marschner, 2022" is wrong. I assume that you refer to chapter 4 of the latest edition of Marschner's textbook, which you cite as "Burkhardt and Eichert" (l.530). The authors given in l. 530 are also wrong, the chapter was written by Eichert and Fernández. Please correct the authors in l. 530 and give "Eichert and Fernández, 2022" as the reference in l.386.

**R: Thank you for this remark. We have made the changes for the citation and bibliography (P21 L444, P27 L642).**

l. 392: Move "(Fig. 3f, fig. S2) to l.391 after "sucrose". The reference to the Figs. belongs to your results, not to the interpretation given in l.391 starting with "likely".

**R: Thank you for this remark. We have made the changes accordingly (P21 L449).**

l.433/434: "These results emphasize […] will be greater…". I think this strong statement should be softened. I agree that your results show that the role of foliar uptake of deposited mineral nutrients may be greater under elevated CO2, but your generalized interpretation goes a bit too far.

**R: Thank you for this remark. The paragraph has been softened accordingly: "These results suggest that the role of foliar uptake of atmospheric nutrients in the mineral nutrition level of plants may increase under eCO$_2$, potentially offsetting some of the nutrient reduction driven by the dilution effect and the downregulation of the root nutrient uptake pathway" (P22 L492-L495).**

l. 438/439: this is your assumption/claim. But how do you justify this statement?

**R: Thank you for your comment. We were very concerned about the potential presence of residual dust particles on the plant surfaces after washing. Thus, we have followed a thorough, three stage-washing protocol that we have established in our lab during previous studies. In addition, we also conducted several experiments to measure whether traces of residual particles that were not washed biased our results.**

**We assume that in the worst-case scenario, remains of 5% of the applied dust particles (from an initial application of 3 grams) on the leaf surfaces after washing. We have mixed a commercial peach leaves powder that is used as a standard for ICP analysis (NIST1547) with 1 to 5% of dust or volcanic ash to investigate the effects of residual particles contamination on nutrient levels. Our results showed that the influence of residual particles became significant only when the percentage of particles on the plant material exceeded 5%, and only for Fe and not for P and Ni.**

**Additionally, we would like to note that in cases where root analysis is performed, there can sometimes be residual soil particles left on the roots despite washing. This is a common occurrence in plant studies, and such residual particles are generally accepted as they do not significantly affect the interpretation of the results.**

**While we believe the information about the typical residual dust amounts is valuable, we think that adding these specific details to the method section is beyond the scope of this paper, which primarily focuses on the main experimental findings.**


l. 551 & 553: Check correct spelling of the names. Fernández, not Ferna´ndez, same for Guzma´n.

**R: Corrected accordingly (P27 L642, L645).**


Please thoroughly check and revise the entire list of references. There are some other inconsistencies, e.g. l. 661 (starting with "V."), l.666 (missing line brake before "Wasserburg"), l.671 (formatting of CO2).

**R: Corrected accordingly (P29 L755, P29 L760).**


My conclusion: After revision this will be a sound and valuable paper. Congratulations to the authors!