

Dear editor and reviewers,

We are happy to resubmit our paper “Direct foliar phosphorus uptake from wildfire ash” (EGUSPHERE-2023-2617) after additional review of the paper.

Our responses to the reviewers are provided below in **bold**. For your convenience, following our responses, you will find the revised version of the manuscript with a “track changes” to make it easier for the reviewers to follow the changes we have made in the text.

Editor comments

Please change the y-axis label of Figure 4 to reflect the variable (and not just the unit; e.g. CO₂ effect on plant nutrient concentration (%)).

R: Thank you for your suggestion. Corrected accordingly (P11 L314).

Report 1

The authors have provided good responses to the reviewers’ comments, and made appropriate changes to the manuscript. I’d just like to raise two points: Regarding the response to my comment on Figs 1 and 2 (page 19 of the authors’ response), I believe that P concentration should be reported, at least in Supplementary Info. The inference “We did not detect changes in P concentration because any additional P was directed to biomass growth since the plants were P starved” should be explicitly stated in the text. Interested biologists will want to see at what P concentration this occurred, and non-biologists will probably not be familiar with the concept that additional P uptake does not always result in increased P concentration but can be invested in additional biomass with similar P concentration. My expectation would be that P concentration would increase AND growth would increase. It is hard to understand how photosynthesis would be boosted (Line 331) without an increase in P concentration, if indeed P did limit photosynthetic rate in these plants.

R: We thank the reviewer for the suggestion. The P concentration of the plants is presented in tables S3 and S4 in the supplementary information. Additionally, we have included a mention of P starvation (P6, lines 231-232) and provided an explanation regarding biomass

gain, boosting of photosynthesis, and P concentration (P12, lines 332-337). The average concentration of P in the P starved plants ranged between 600-800 µg/g, and we assume that the additional P absorbed via the foliar pathway was directed towards biomass gain and photosynthesis rather than increasing the P concentration.

In the new Fig. 1, both in the figure, its caption and in the main text, the units are wrong: 6000 mg P per g ash is impossible. You mean mg/kg or microg/g.

R: Changed accordingly (P8 L260), (P8 L268).

Report 2

Delete “that we” on line 226.

R: Corrected accordingly (P6 L227).

Change show to showed on line 230 to match the tenses.

R: Corrected accordingly (P6 L233).

It is difficult to see the median and IQR in Fig. 3. Please ensure that the final uploaded high-res version is clearer.

R: We thank the reviewer for this comment. We widened the median and interquartile range lines and softened the pattern of the graphs. (P10 L338).

The I in “In” should be capitalized on line 388.

R: Corrected accordingly (P13 L396).