

Biochar additions in the growing media for the partial replacement of peat, for the production of potted snapdragon flowers

Antonios Chrysargyris¹, Munoo Prasad^{1,2}, Nikos Tzortzakis^{1,*}

¹Department of Agricultural Sciences, Biotechnology and Food Science, Cyprus University of Technology, Limassol, 3603, Cyprus.

²Compost/AD Research & Advisory (IE, CY), Naas, Ireland.

*Email: nikolaos.tzortzakis@cut.ac.cy

Biochar use as a component on peat-based growing media positively affects plant growth and yield.

Biochar serves not only as a peat partial substitute, but is also a source of carbon, it can reduce mineral leaching and acts as a biostimulant.



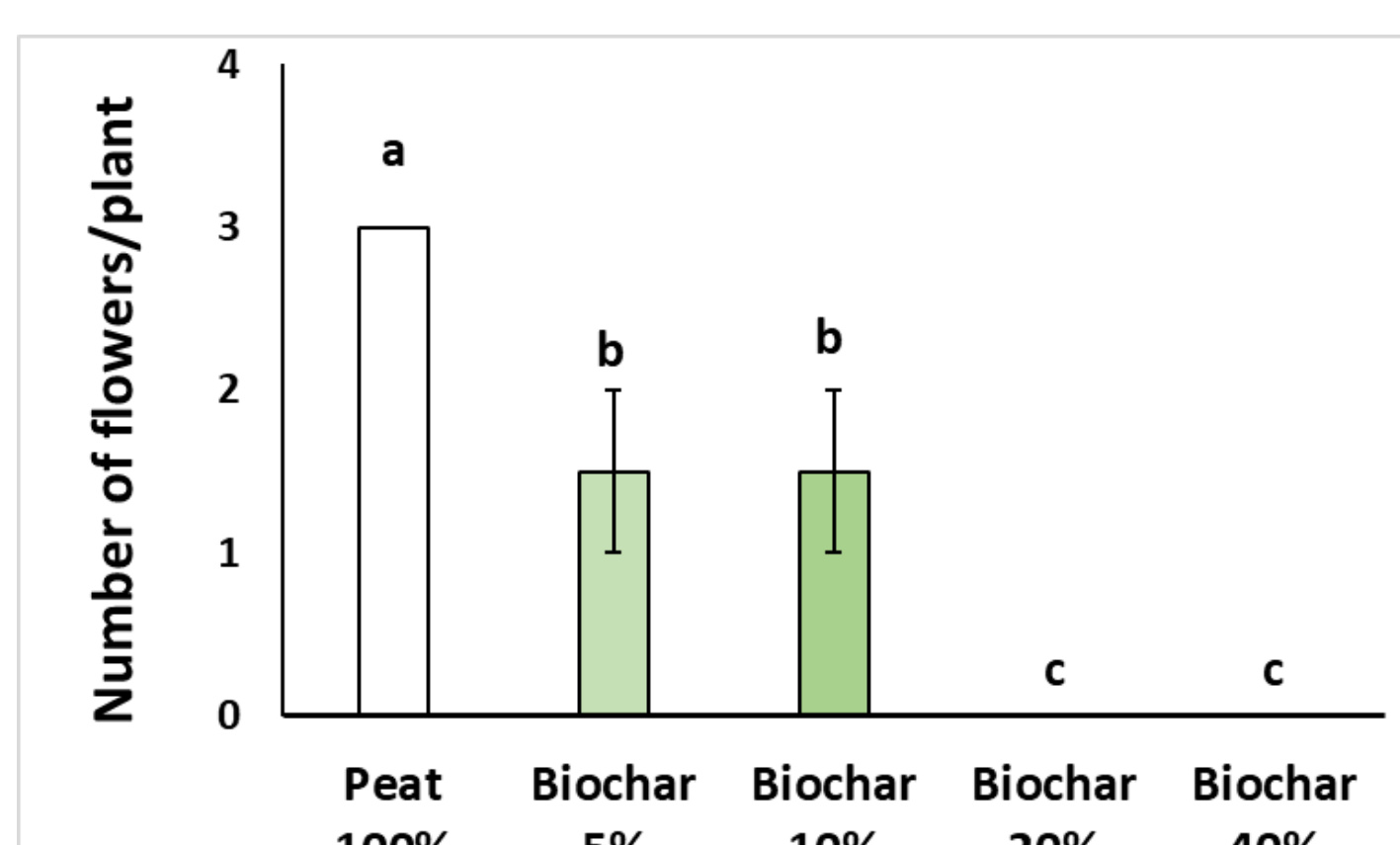
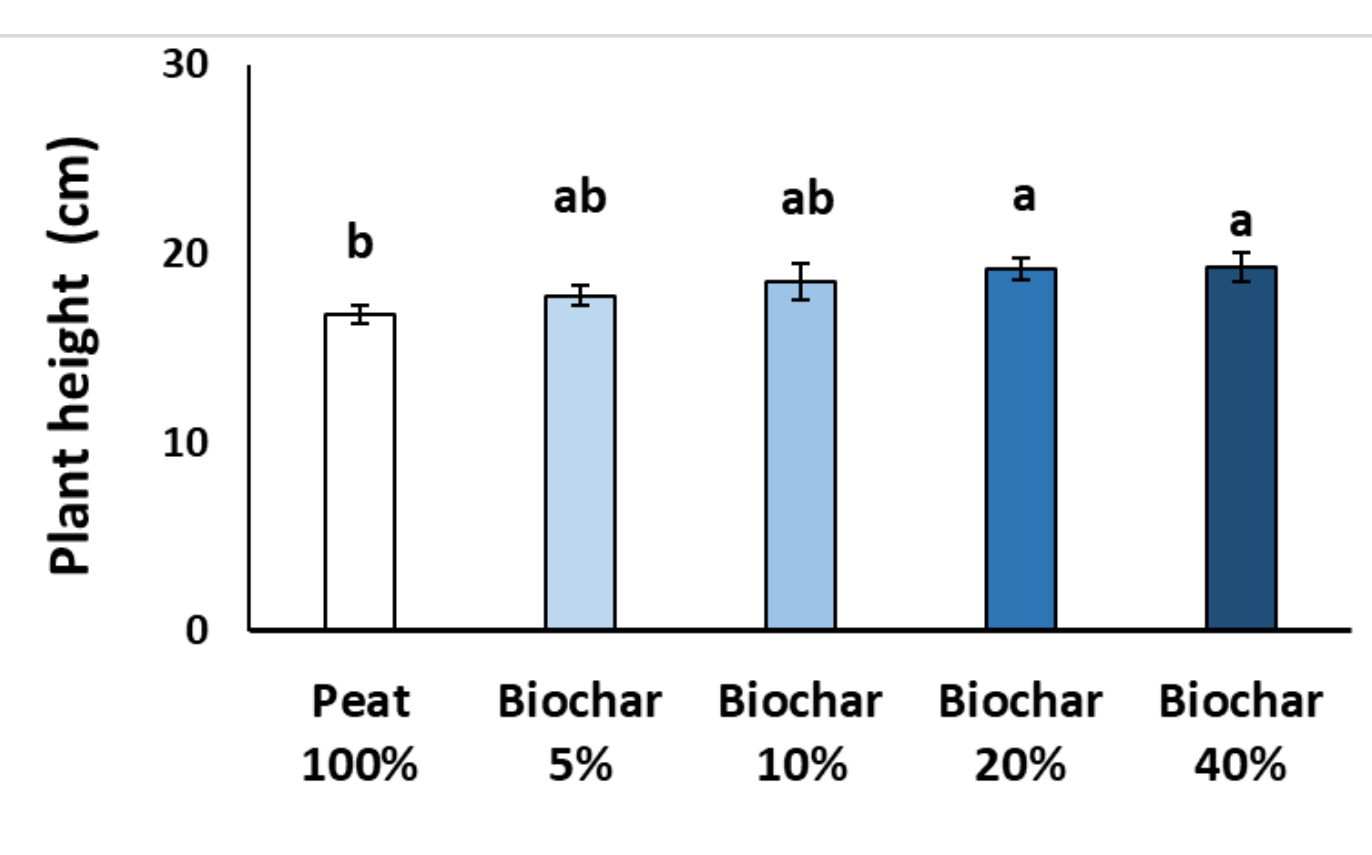
In the present study, a commercial grade **biochar** (from feedstock forest wood) was mixed in 4 different ratios (0-5-10-15-20%) with peat (P) and the potted **snapdragon** flower was used as the tested plant.

Plant growth parameters and mixtures properties were assessed, in order for the mixtures to be evaluated as a substrate for ornamental plant production/cultivation.

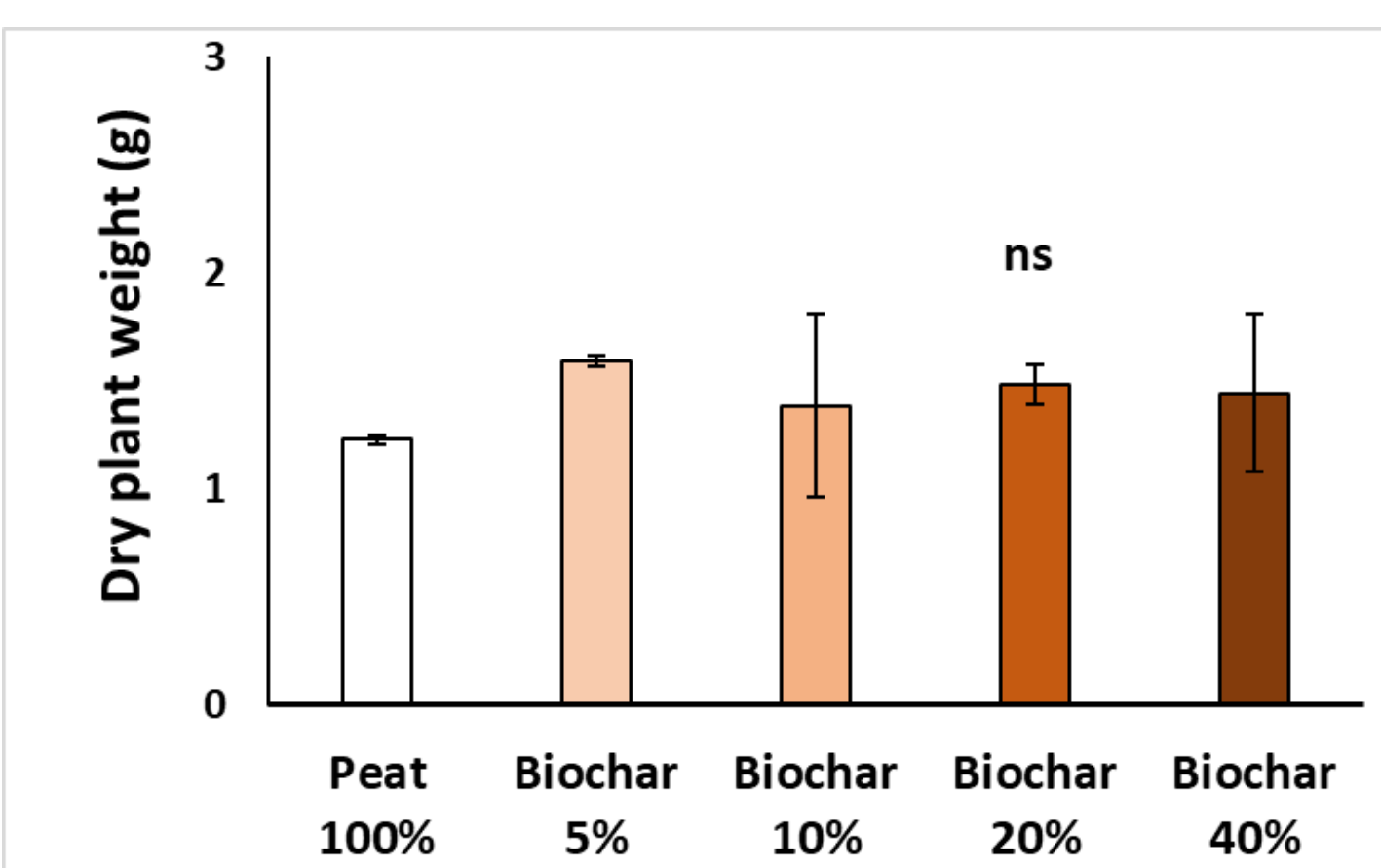
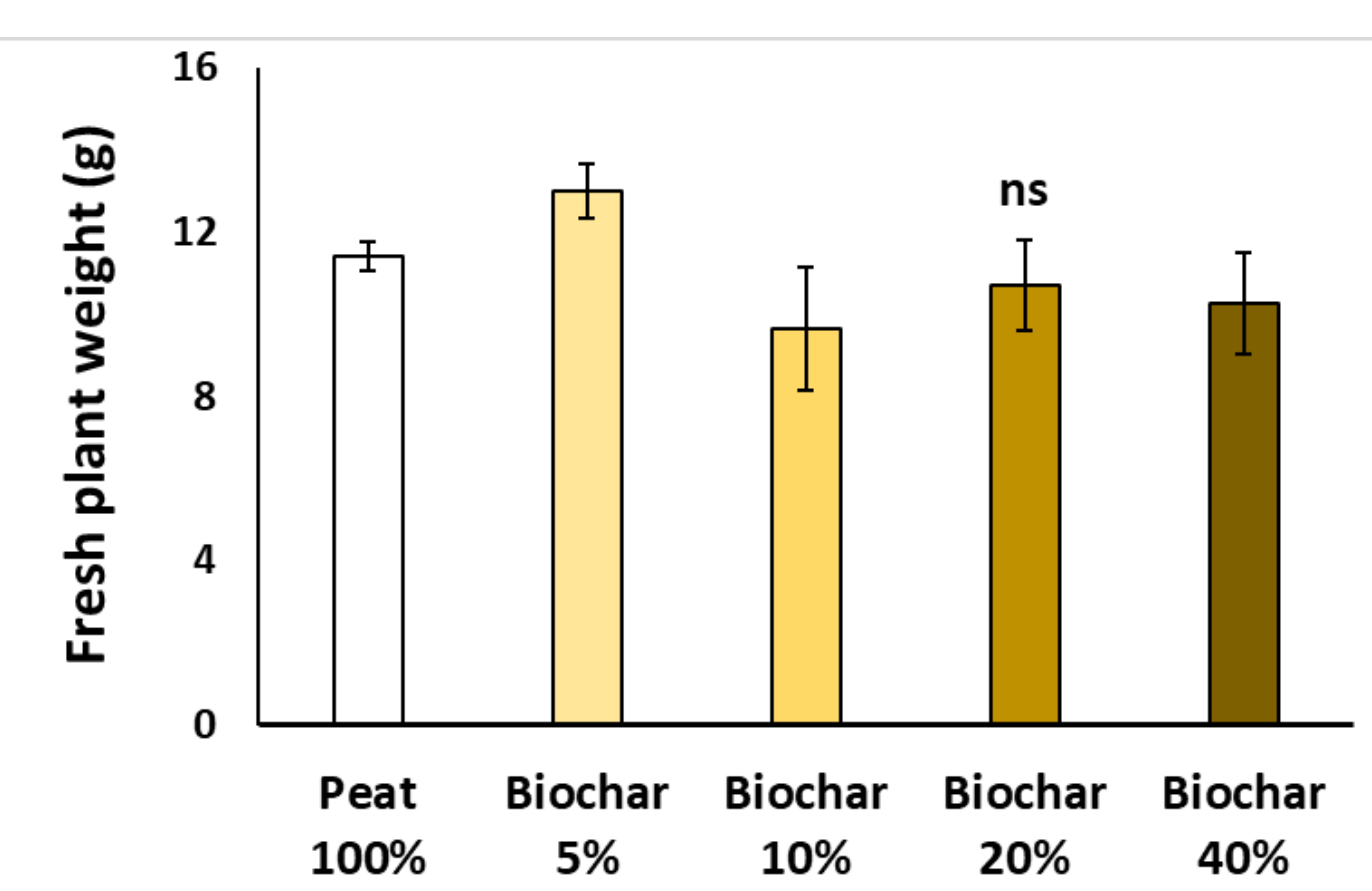


- The Biochar used revealed high K levels and high pH at 9.56.
- Therefore, the increased rates of Biochar in the substrate mixture increased the pH and affected the EC of the tested mixtures.

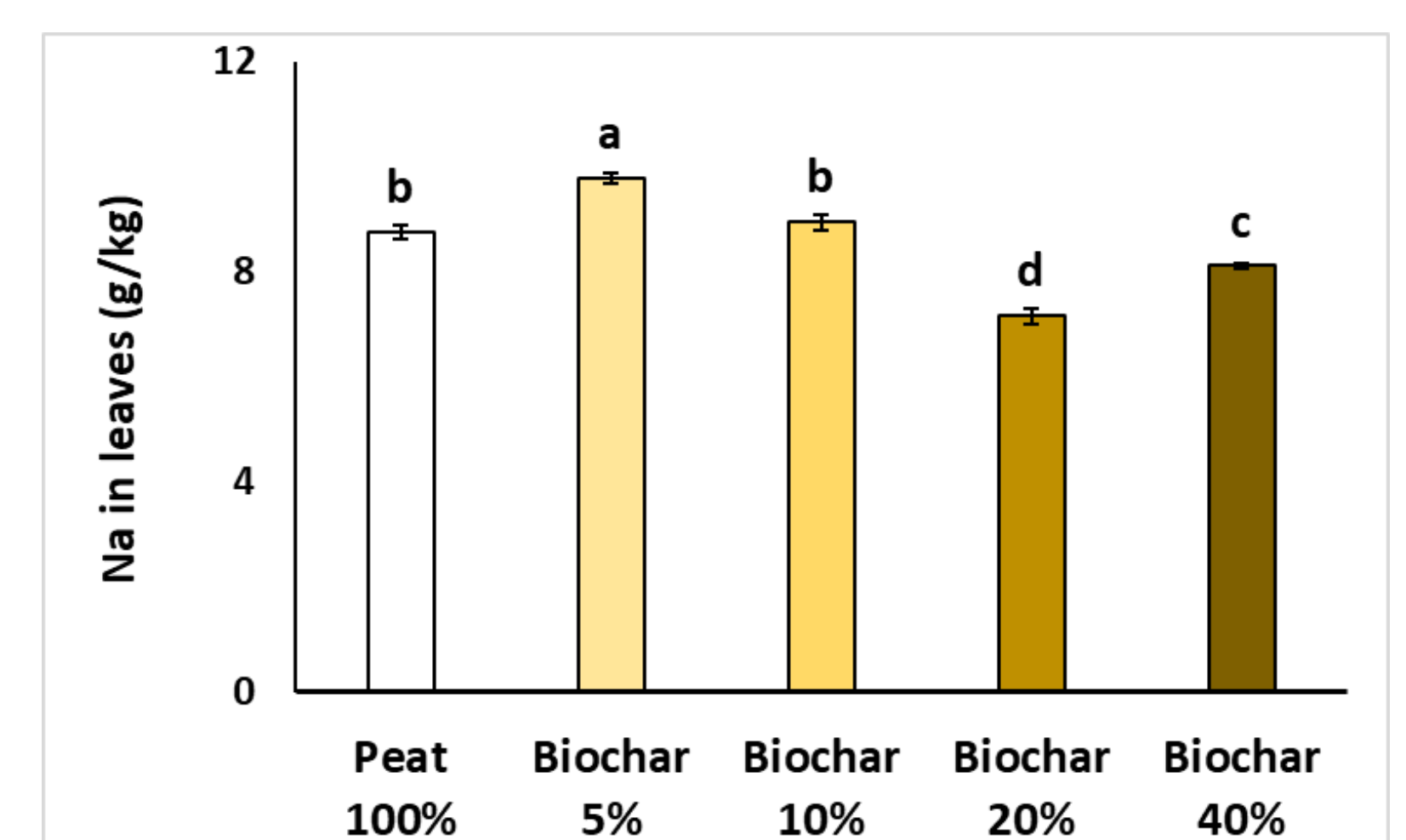
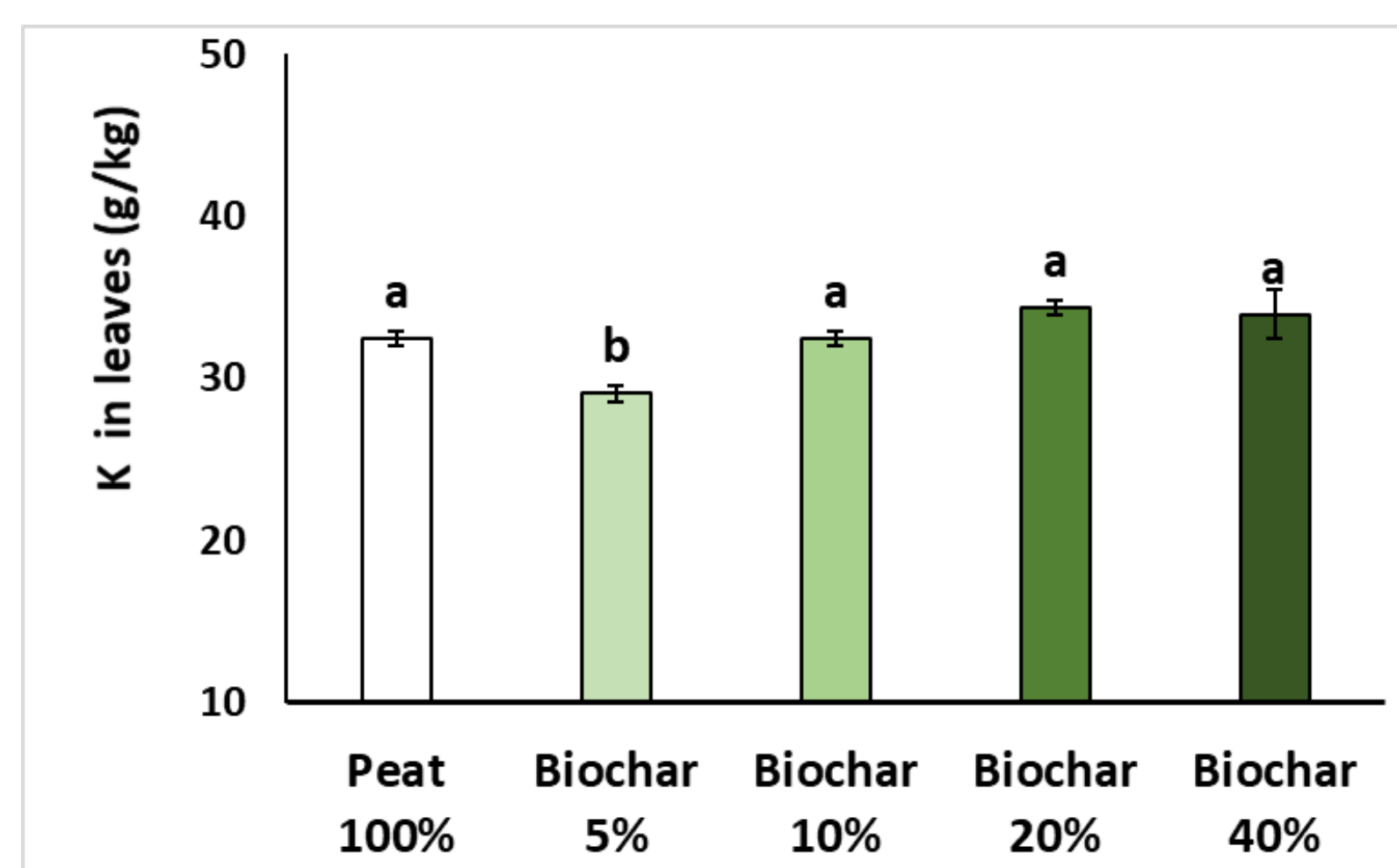
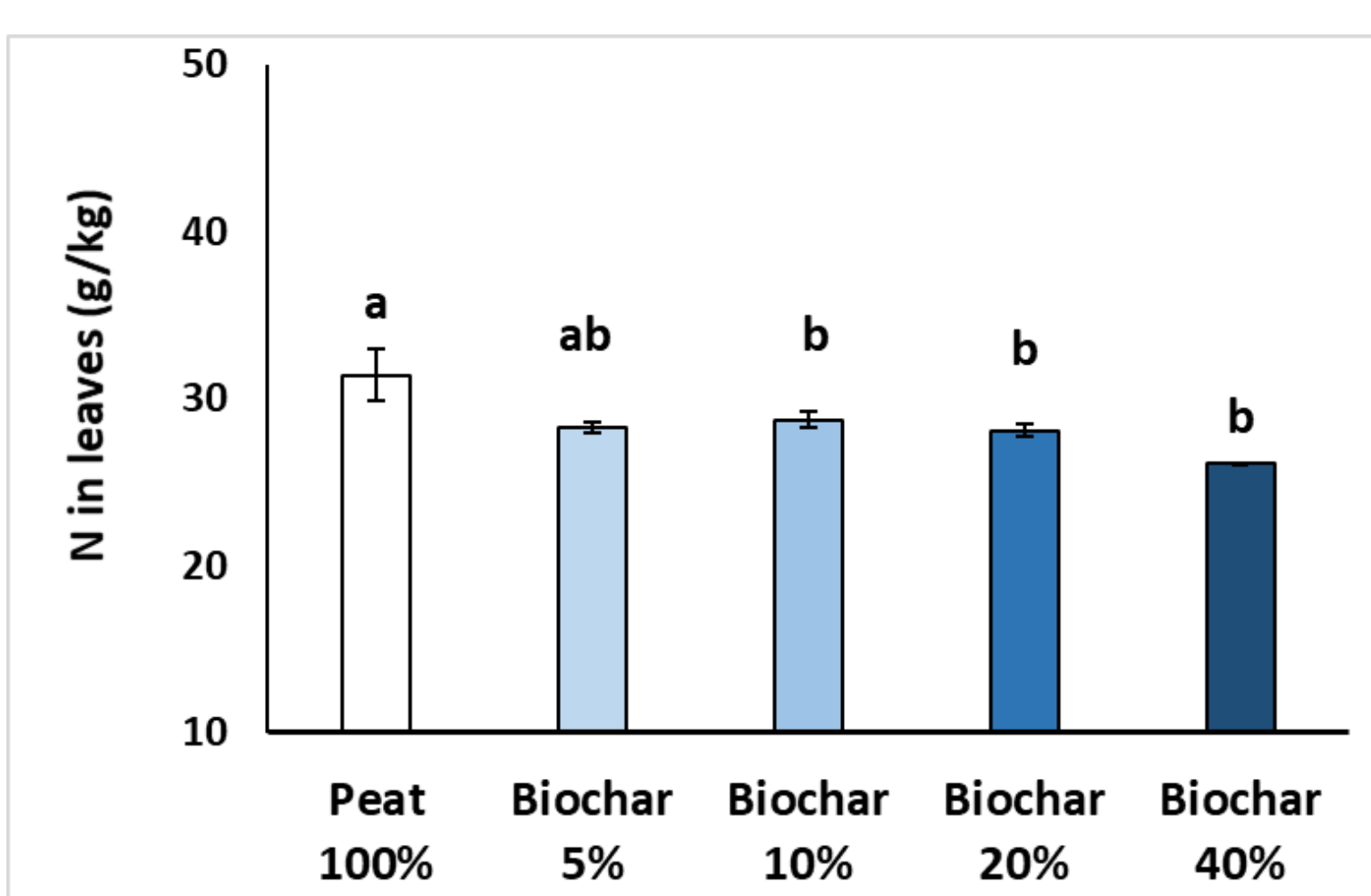
Plant growth parameters



- High ratio (15-20%) of Biochar in the substrate mixtures affected a series of plant growth parameters. Plants grown in these mixtures appeared to have increased plant height, while they produced less number of flowers.
- As a consequence of that, all plants resulted having similar weight, fresh and dry.



Leaf mineral content: Mineral content in plants' leaves have been affected from the Biochar presence



- The addition of Biochars decreased N content in snapdragon leaves.
- Biochar at 5% decreased K content in leaves in comparison to the control and/or higher Biochar levels
- Na was highly accumulated in leaves

Conclusion:

An increased stress is occurred when high ratio of Biochar is used (i.e. 20%), while lower ratios (5-10%) can benefit plant growth related parameters and can be used as peat additive in the growing media. Biochar is a quite promising material as a component in the growing media mixtures.