



# Assessment of Organic Amendments on Vegetative and Productive Performances of Strawberry Plants Under Different Growing Conditions

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## SPOKE 8, WP E TASK DI APPARTENENZA 8.3.2

### ABSTRACT

The world faces food scarcity challenges in feeding a growing population, climate change and resource depletion. By integrating these interventions within a circular economy framework, there is need to contribute to a more sustainable and resilient agricultural model. To address these issues, new innovative and sustainable agricultural practices are needed.

The activity of this research group aimed at investigating the effect of biochar and wood distillate on strawberry (*Fragaria x ananassa*) plant growth, development, and propagation, under diverse cultivation systems: *in vitro*, in innovative agricultural systems (hydroponic and aeroponic), and in open field conditions. Results indicated varying responses across cultivation systems. Biochar influenced plant growth and development, wood distillate can be beneficial for strawberry growth and fruit quality.

This research contributes to the understanding of biochar and wood distillate as potential sustainable inputs for strawberry production, highlighting the importance of specific cultivation environments. Future research should focus on long-term impacts, economic feasibility, and the integration of these strategies into broader agricultural systems to address the pressing issues of food security and climate change.

### Influence of biochar and wood distillate on strawberry (*Fragaria x ananassa* L.) morpho-physiological performances, in soilless conditions

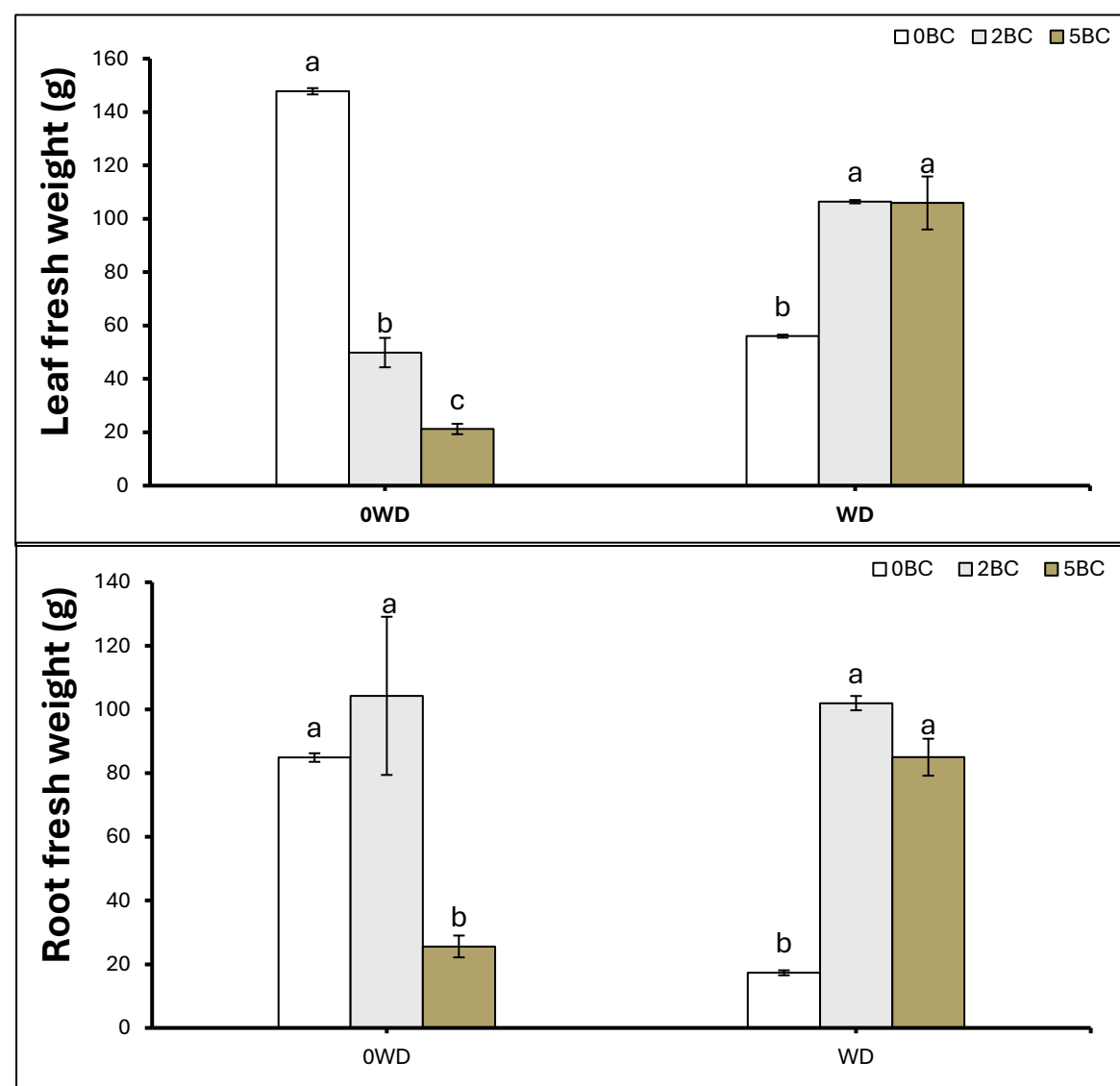
#### Soilless in pots

Experimental factors: 2 (Two-way ANOVA)

Factor A: Biochar (BC)

Factor B: Wood Distillate (WD)

BC	WD
0BC	0 and 5m/L
2BC	0 and 5m/L
5BC	0 and 5m/L



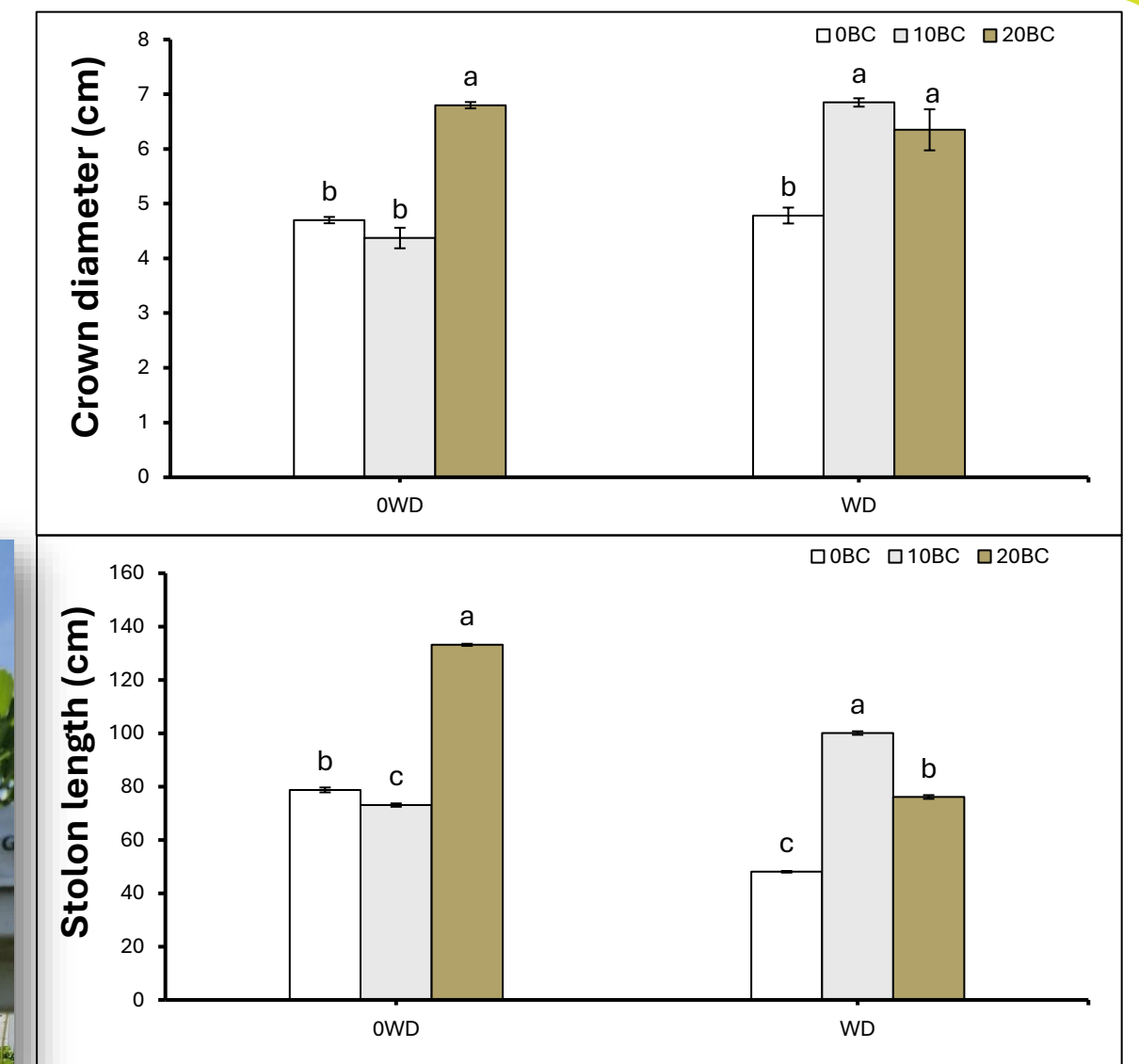
#### Soilless in growth bags

Experimental factors: 2 (Two-way ANOVA)

Factor A: Biochar (BC)

Factor B: Wood Distillate (WD)

BC	WD
0BC	4% WD
10BC	4% WD
20BC	4% WD



### Influence of biochar and wood distillate on growth and development of strawberry spp. plants, under innovative cultivation systems

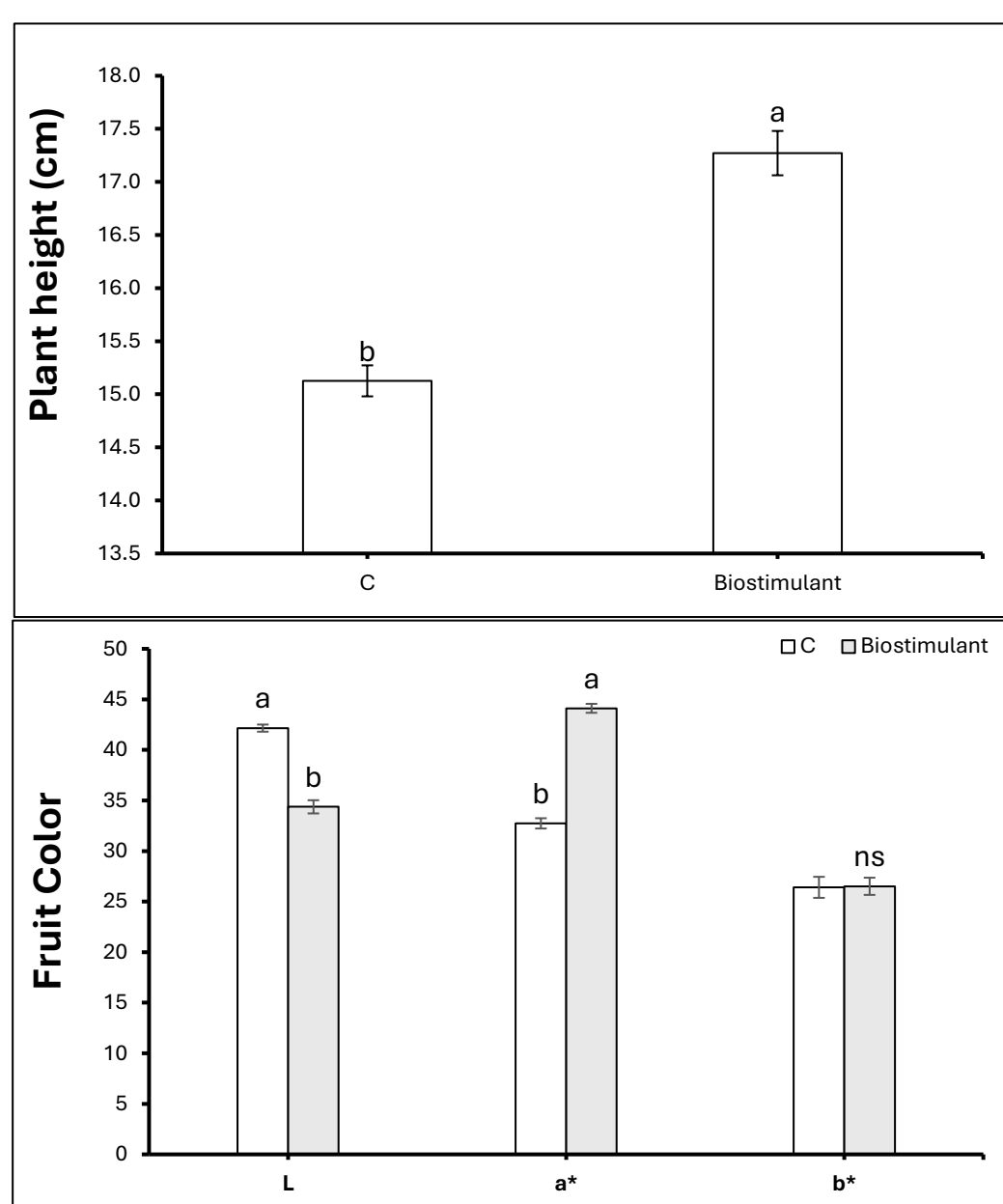
#### Column Hydroponic System

Experimental Factors: 2 (Two-way ANOVA)

Factor A: Cultivars (CVs): MALGA and ANNABELLE

Factor B: Treatments (T): C and 50 mL/L Fermented kiwi waste (Biostimulant)

CV	T
Malga	0 and 50m/L
Annabelle	0 and 50m/L



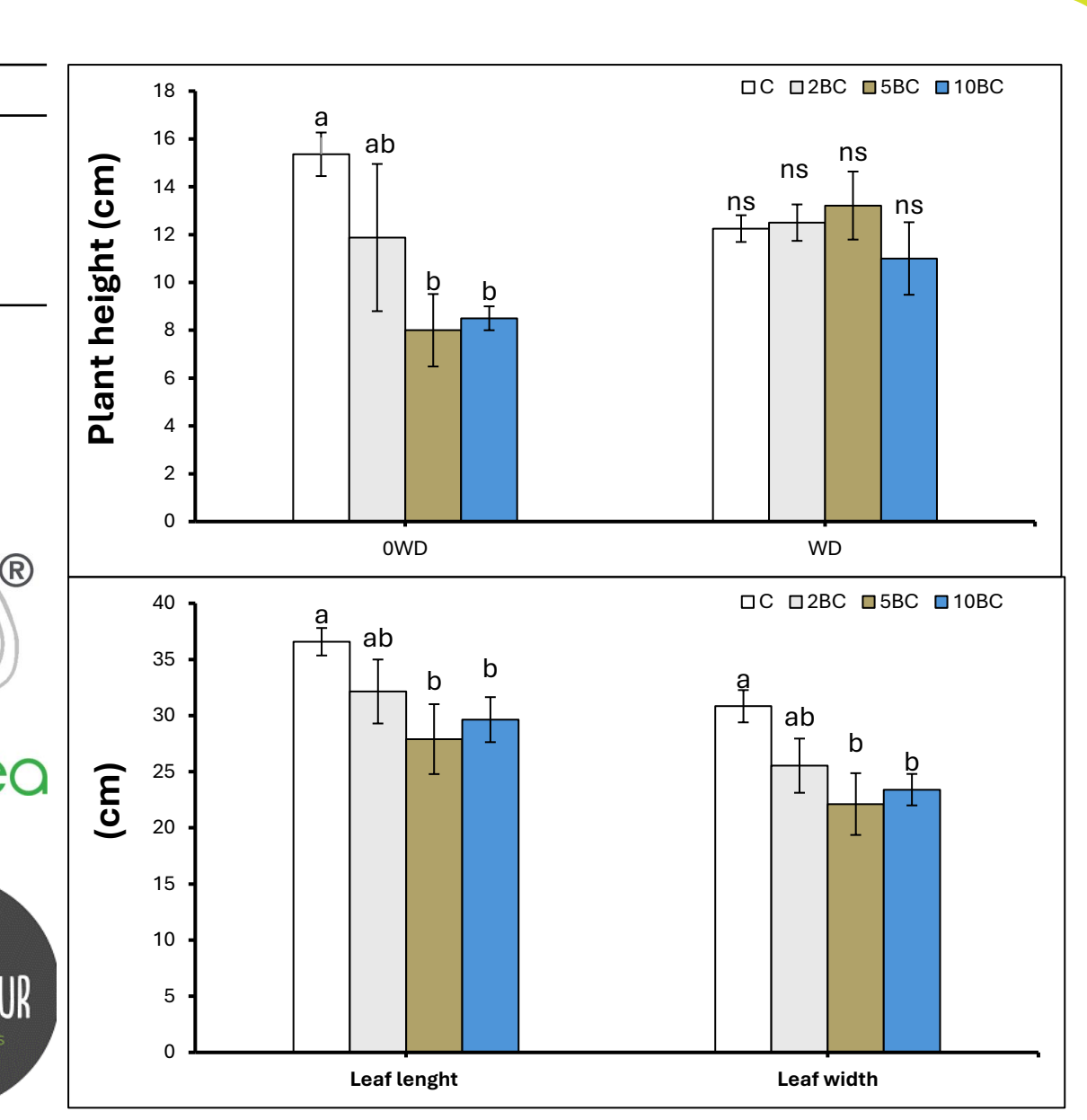
#### Aeroponic System

Experimental Factors: 2 (Two-way ANOVA)

Factor A: Biochar (BC)

Factor B: Wood Distillate (WD)

BC	WD
0BC	0-3ml/L WD
2BC	0-3ml/L WD
5BC	0-3ml/L WD
10BC	0-3ml/L WD



### Influence of biochar and wood distillate on strawberry propagation

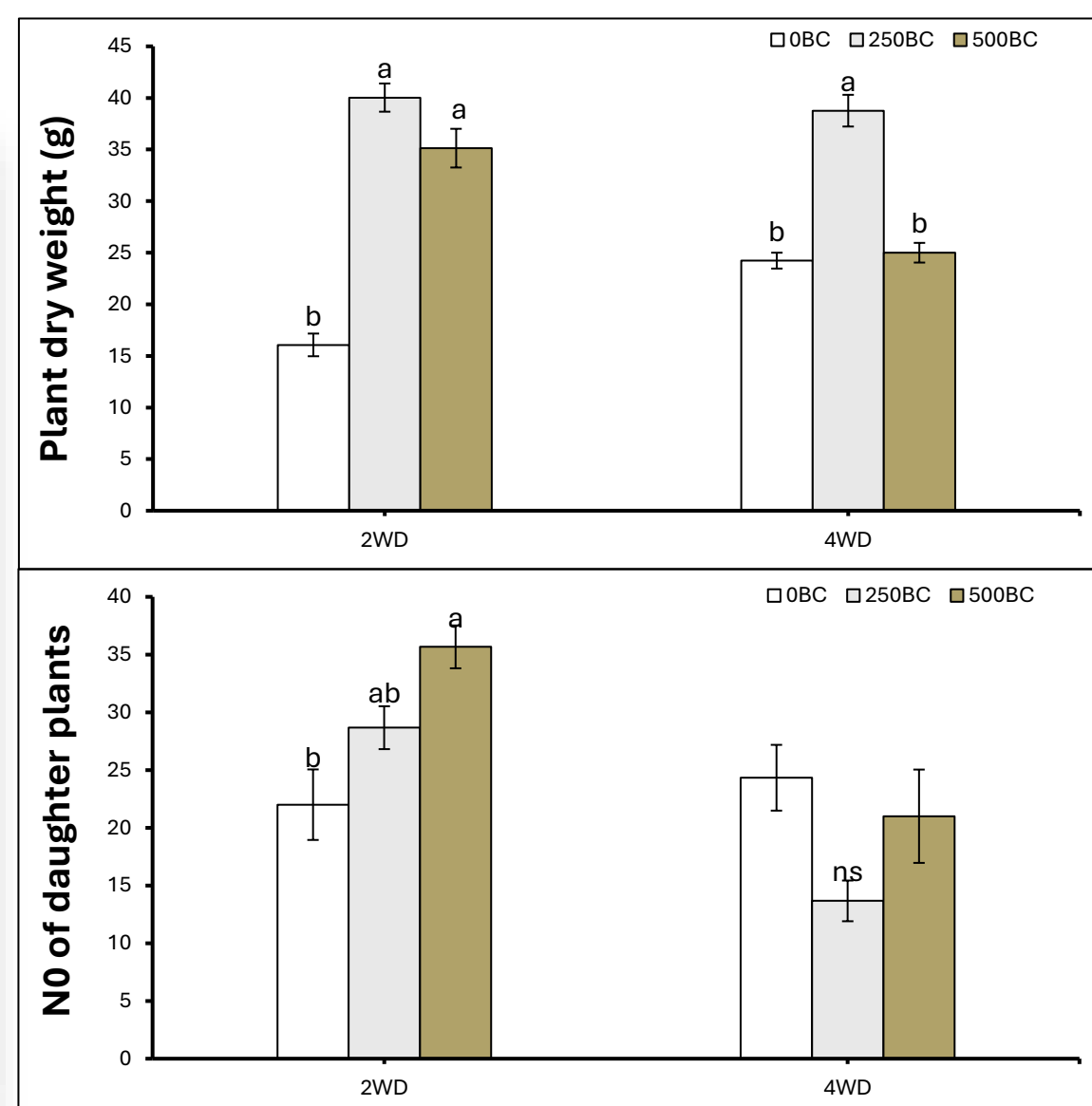
#### Open field

Experimental factors: 2 (Two-way ANOVA)

Factor A: Biochar (BC)

Factor B: Wood Distillate (WD)

BC	WD
0BC/ha	2 and 4WD
250BC/ha	2 and 4WD
500BC/ha	2 and 4WD



### Evaluation of biochar for strawberry micropropagation

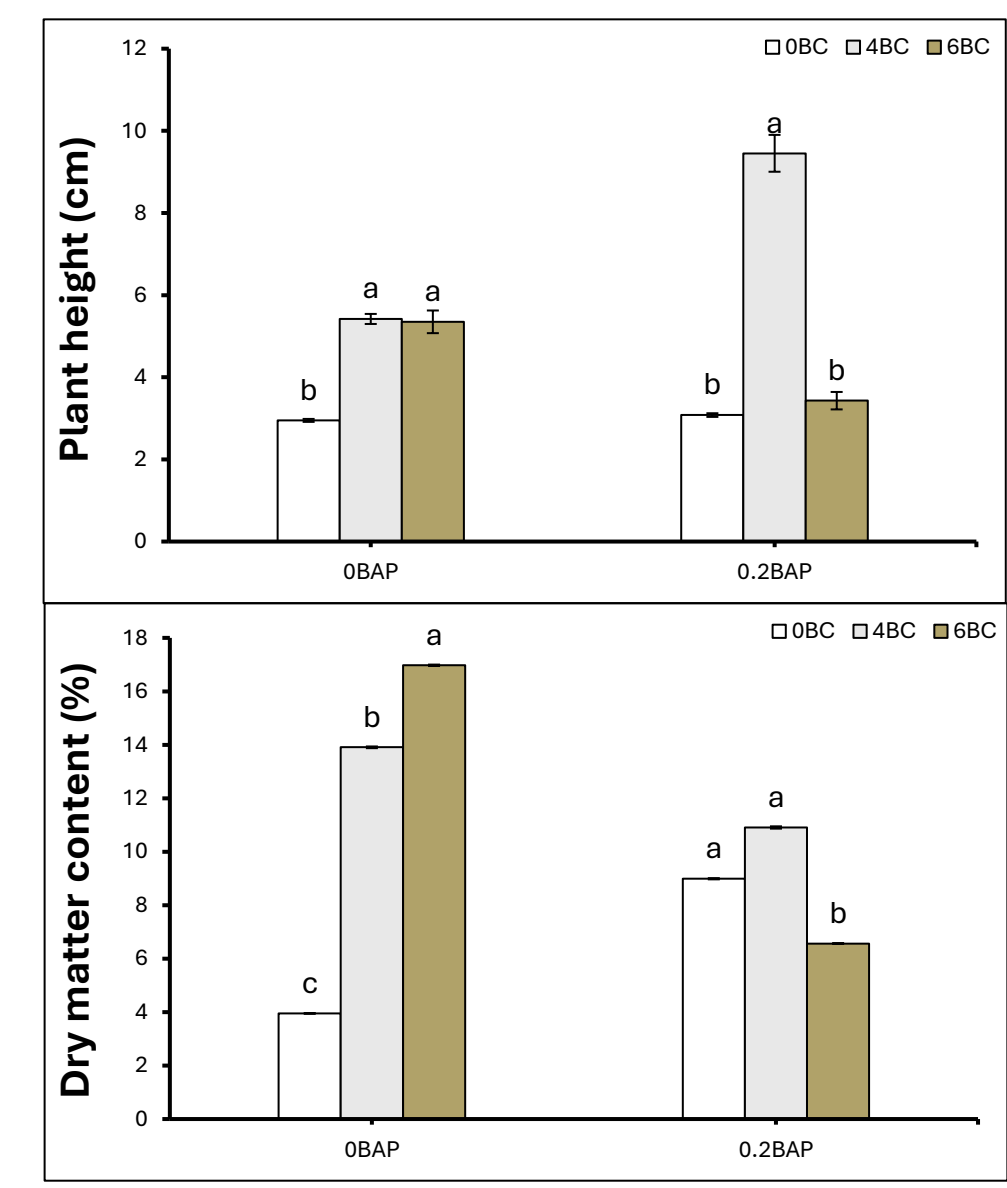
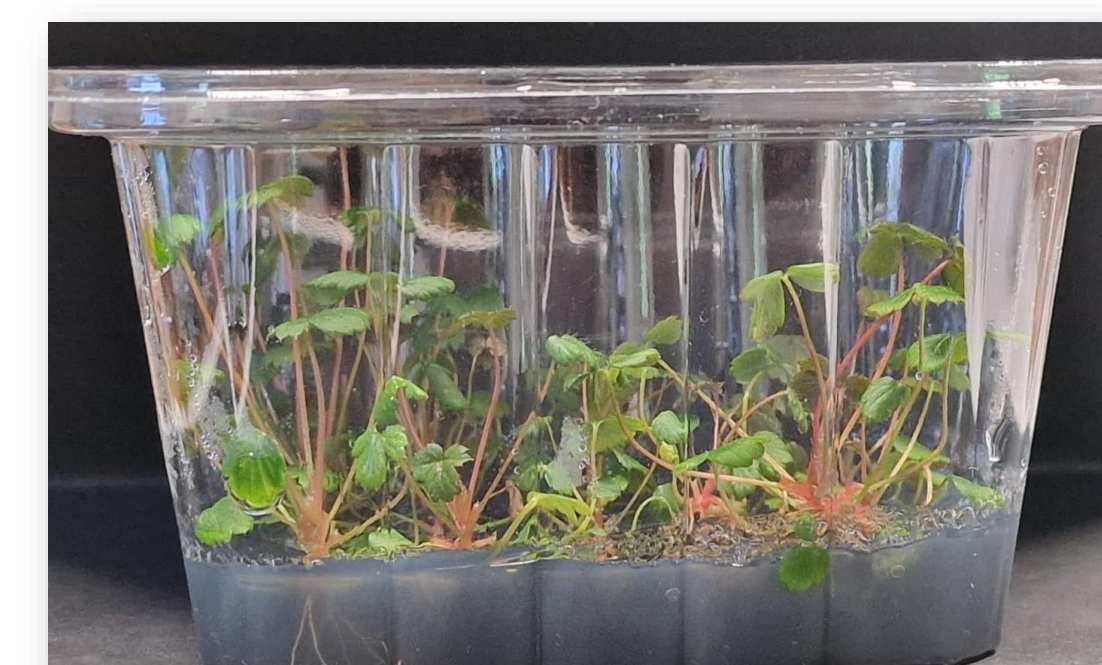
#### In vitro

Experimental factors: 2 (Two-way ANOVA)

Factor A: Biochar (BC)

Factor B: 6-Benzylaminopurine (BAP)

BC	BAP
0BC	0-0,2 BAP
4BC	0-0,2 BAP
6BC	0-0,2 BAP



### References

- ❖ Akram, M. Z., Libutti, A., & Rivelli, A. R. (2023). Evaluation of vegetative development of quinoa under water stress by applying different organic amendments. *Agronomy*, 13(5), 1412.
- ❖ Tang, X., Li, Y., Fang, M., Li, W., Hong, Y., & Li, Y. (2024). Effects of Different Water Storage and Fertilizer Retention Substrates on Growth, Yield and Quality of Strawberry. *Agronomy*, 14(1), 205.

### Congress participation

- ❖ International conference (European Horticulture Conference) EHC, Bucharest, Romania from 12 to 16 of May 2024.
- ❖ V Convegno Nazionale sulla Micropropagazione Vitro SOI 2024; Università della Tuscia, Viterbo (Italy).

