

Influence of biostimulators Regoplant and Charkor on growth and development of micropropagated pear plants at acclimatization stage

Nataliya Dimitrova*, Lilyana Nacheva, Diyana Aleksandrova, Viktorija Nikolova

Fruit Growing Institute – Plovdiv
*Corresponding author: natali.dimitrova@yahoo.com

The Problem

In recent years, there has been a growing interest in biostimulants as an alternative to chemicals for safe and sustainable agriculture. The aim of this study was to analyze the effect of biostimulators Regoplant and Charkor (Agrobiotech, Ukraine) on growth and development of micropropagated pear plants at acclimatization in floating system.

Material and methods

The study were done with micropropagated pear rootstock (*Pyrus communis* L. ‘Old Home’ x ‘Farmingdale’ 333). *In vitro* propagated and rooted plantlets were acclimatized in a floating system with 100 µl L⁻¹ Regoplant or Charkor. Plantlets with no additional treatments served as control. Data on growth parameters, chlorophyll *a* fluorescence (OJIP test) and antioxidant activity were collected 45 days after transplanting to *ex vitro* conditions.

Results and discussion

Fig. 1. Appereance and growth parameters of pear plants 45 days after acclimatization on floating system with biostimulators Regoplant or Charkor. Control – conventional acclimatization in peat-perlite, without nutrient solution.

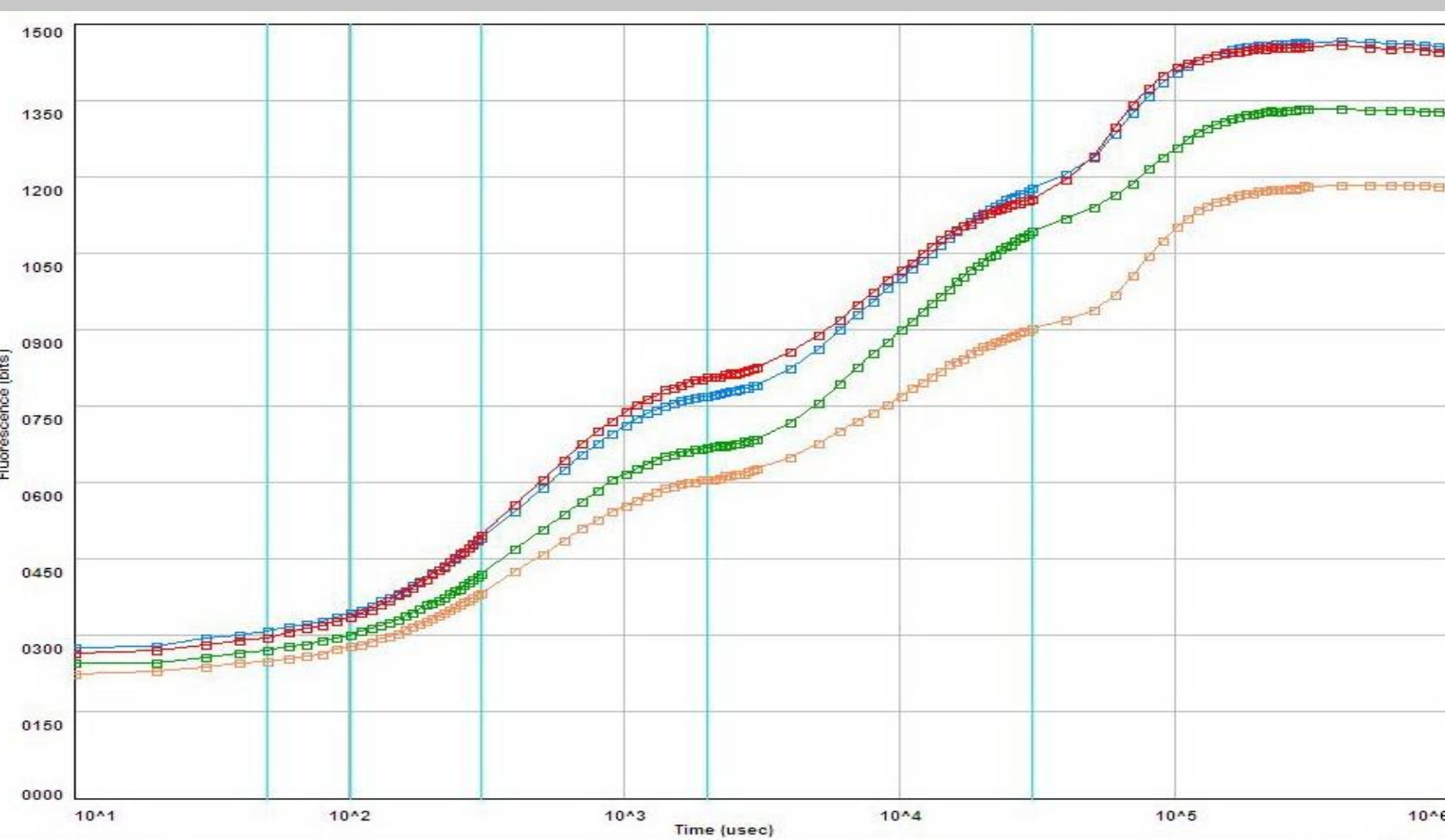
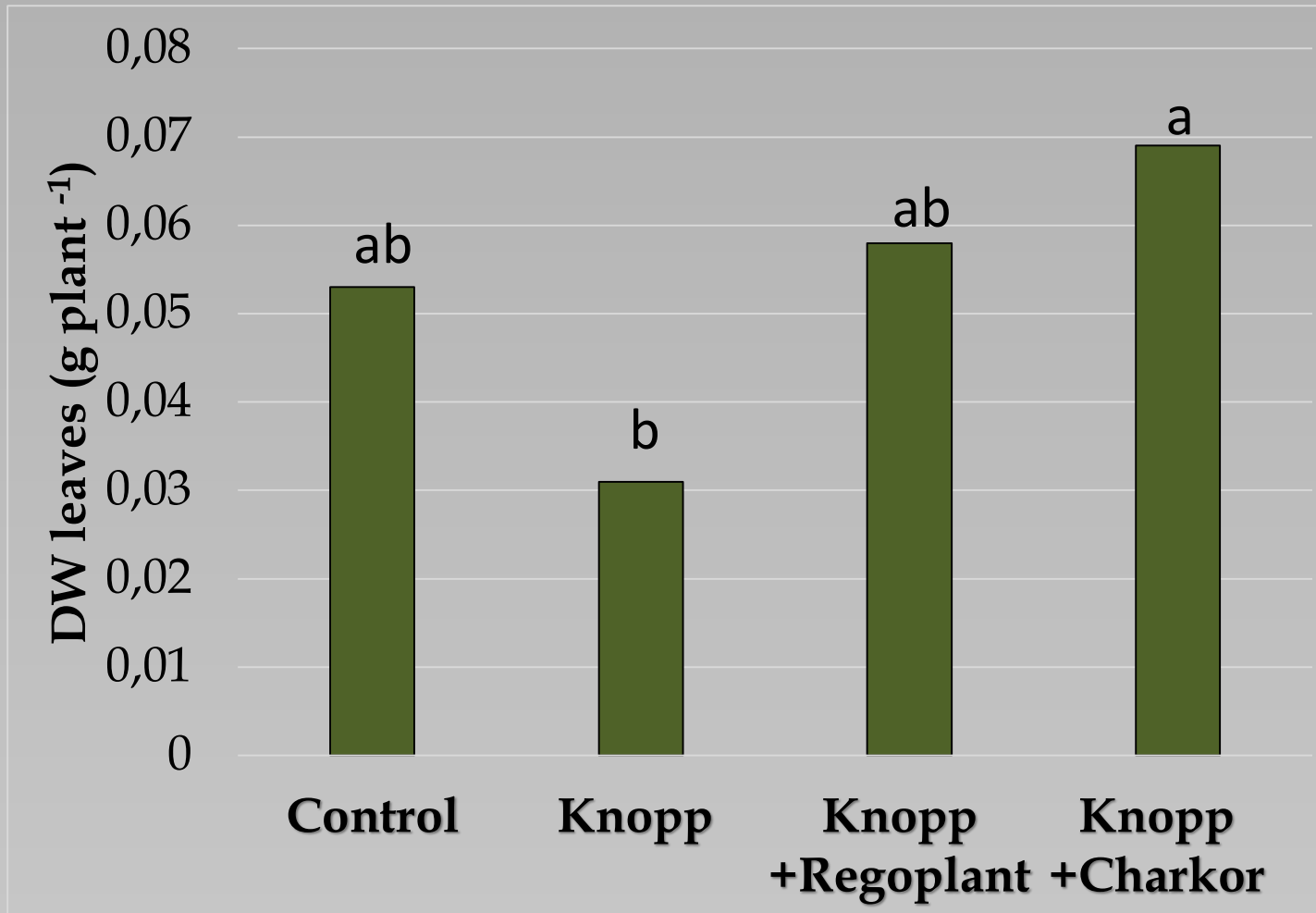
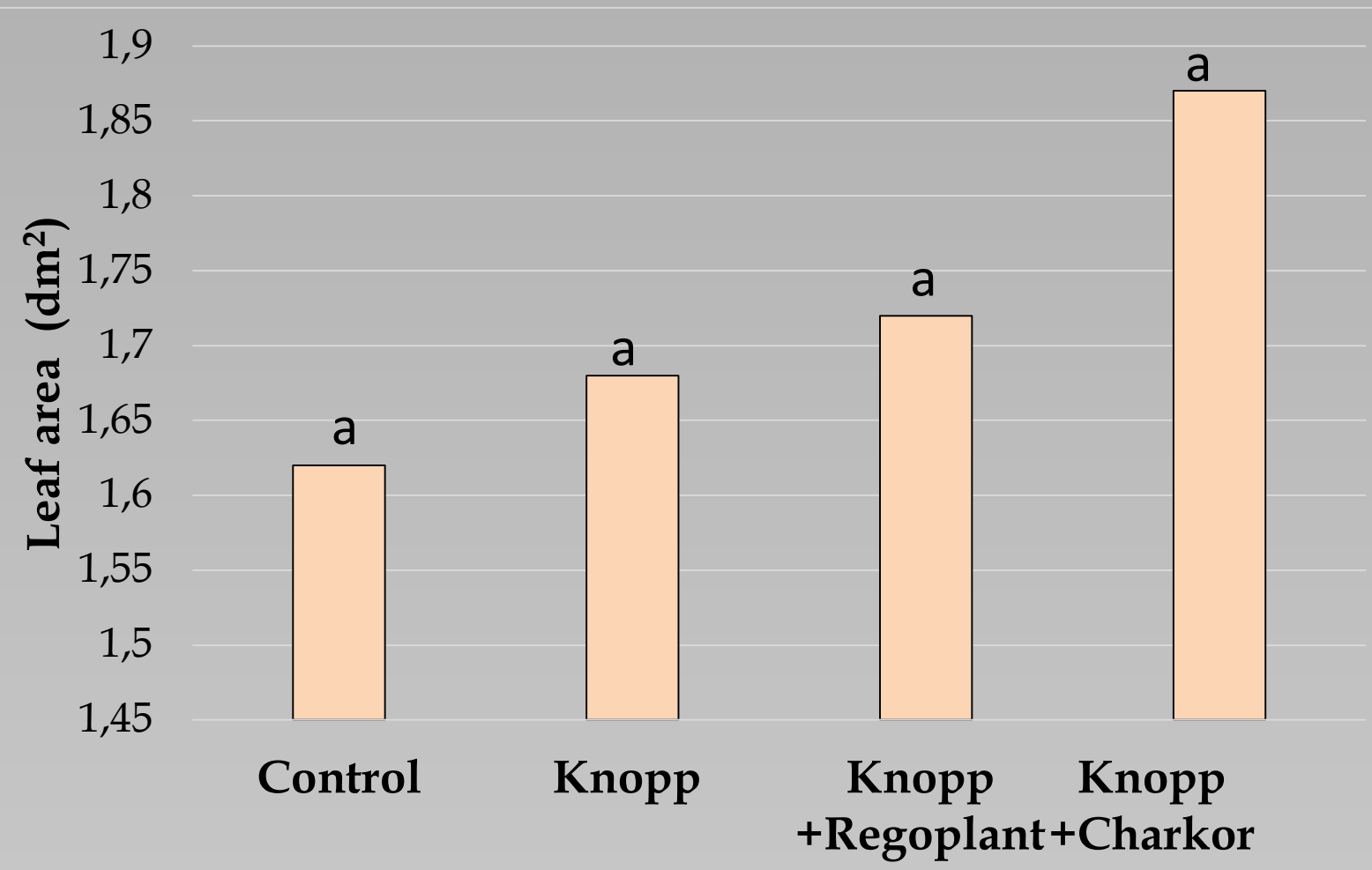
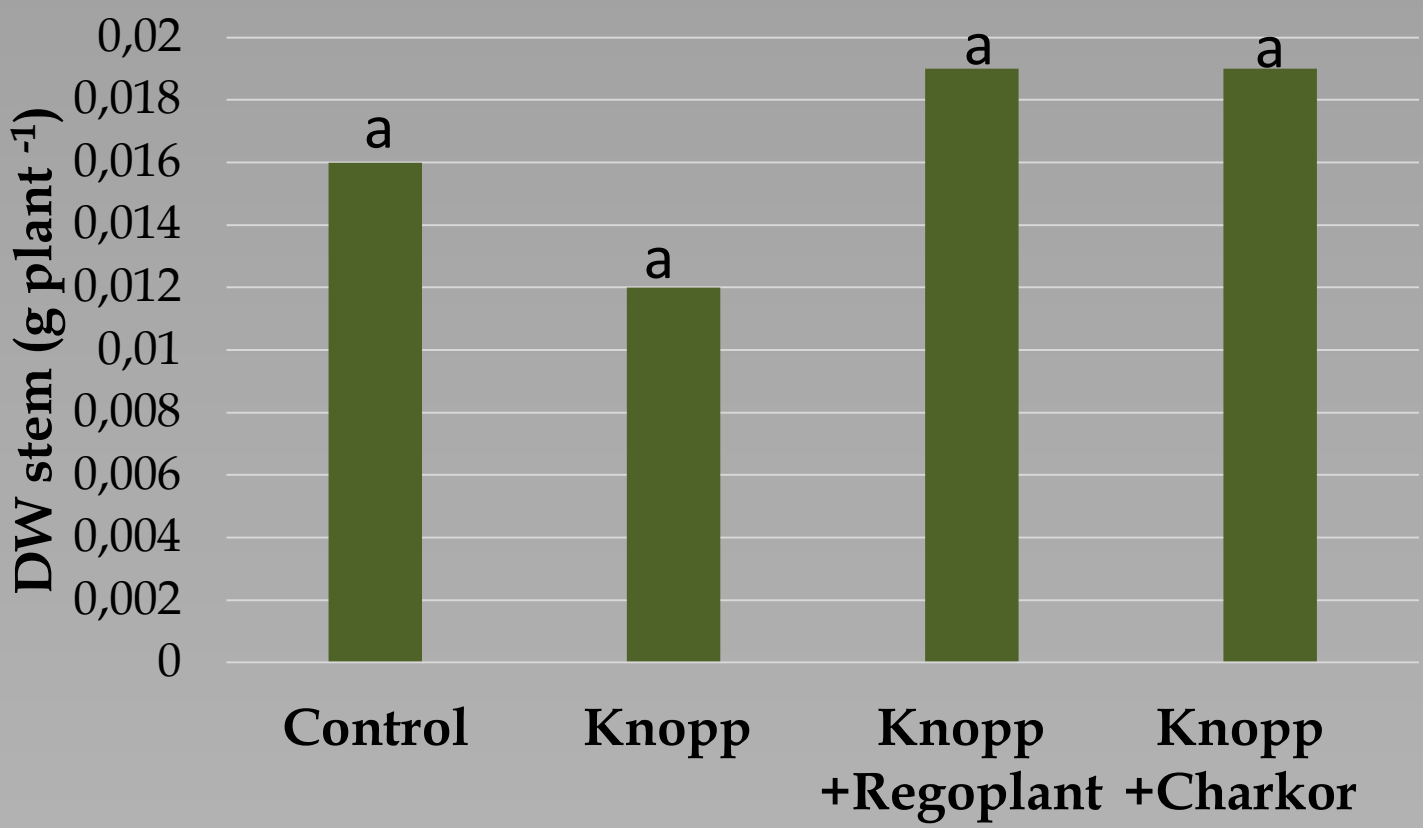
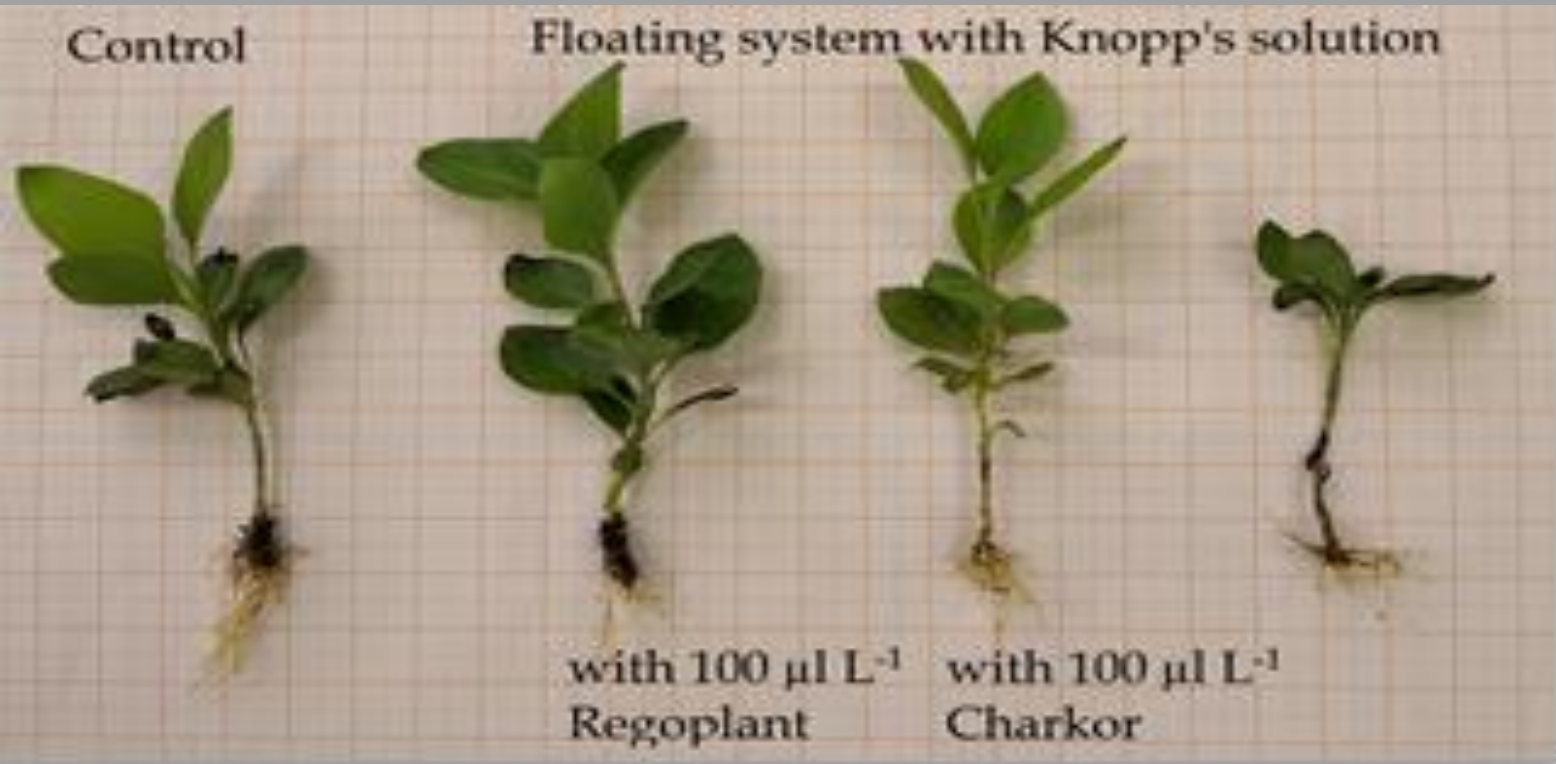


Fig.2. Induction curves of rapid chlorophyll *a* fluorescence (OJIP test) of pear plants acclimatized in a floating system (—) Control, conventional acclimatization in peat-perlite; (—) Knopp's nutrient solution; (—) Knopp's nutrient solution, supplemented with 100 µl L⁻¹ Charkor; (—) Knopp's nutrient solution, supplemented with 100 µl L⁻¹ Regoplant.

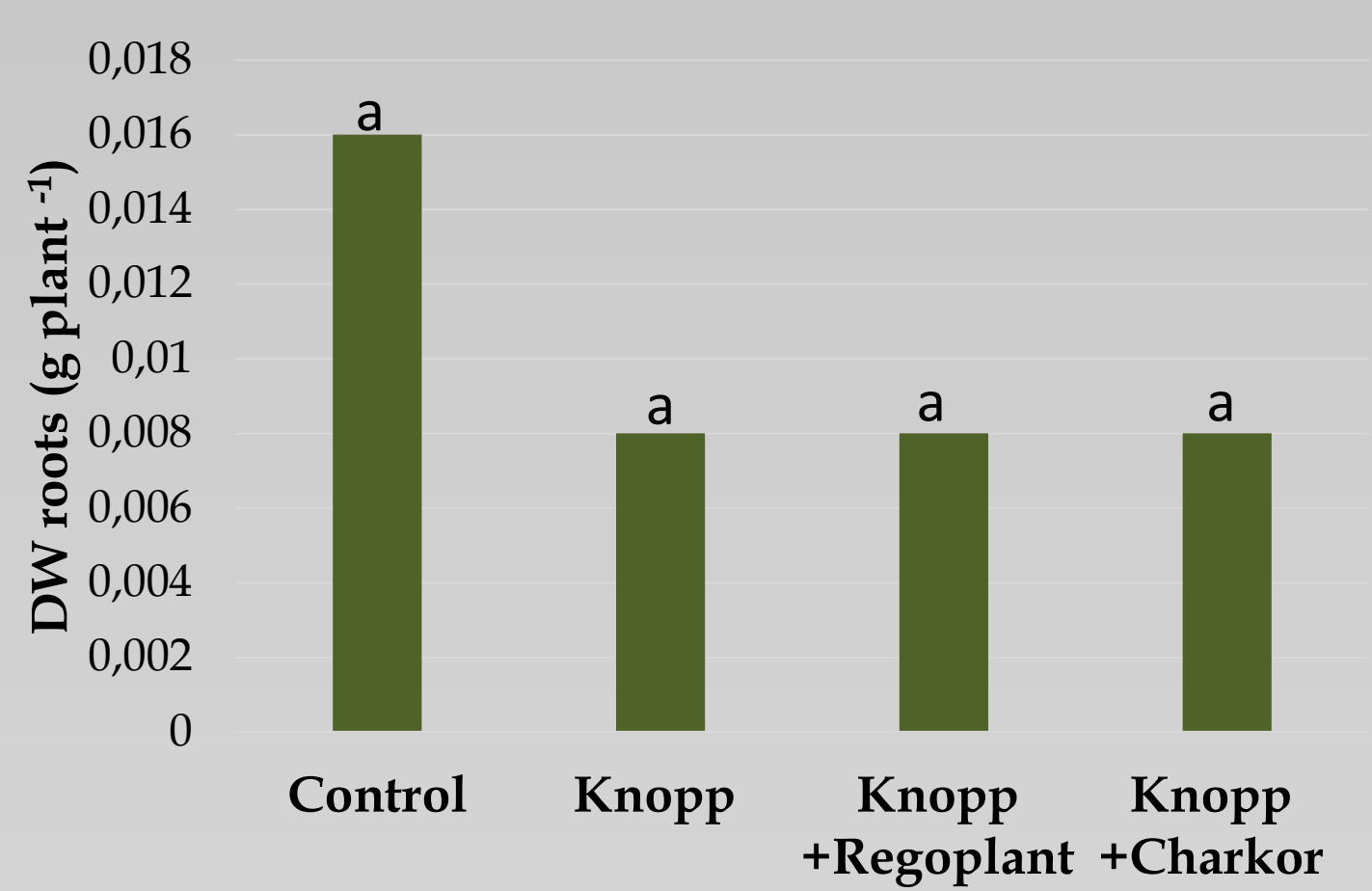


Table 3. Chlorophyll *a* fluorescence parameters (OJIP test) of the pear plants 45 days after acclimatization on floating system with biostimulators Regoplant or Charkor. Control – conventional acclimatization in peat-perlite, without nutrient solution.

Parameters	Control	Knopp	Knopp + Regoplant	Knopp + Charkor
F _O	291 ± 9 ^a	243 ± 65 ^a	260 ± 5 ^a	276 ± 5 ^a
F _M	1465 ± 51 ^a	1190 ± 356 ^a	1338 ± 129 ^a	1460 ± 135 ^a
F _v	1173 ± 49 ^a	947 ± 291 ^a	1078 ± 124 ^a	1183 ± 139 ^a
F _v /F _M	0.801 ± 0.01 ^a	0.794 ± 0.01 ^a	0.805 ± 0.02 ^a	0.809 ± 0.02 ^a
PI _{ABS}	3.05 ± 0.24 ^a	3.36 ± 0.22 ^a	3.77 ± 0.86 ^a	2.89 ± 1.16 ^a
PI _{total}	2.16 ± 0.47 ^a	3.15 ± 0.41 ^a	2.15 ± 0.53 ^a	2.48 ± 0.55 ^a

Conclusions

The results of this study demonstrate that the enrichment of the nutrient solution with biostimulator Charkor (100 µl L⁻¹) in a floating system could improve the acclimatization of *in vitro* micropropagated pear plantlets to *ex vitro* conditions.

The beneficial effect of Charkor, expressed in better survival rate and better growth could support the acclimatization of other woody species in floating conditions.

Acknowledgements

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