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Morphological, physiological and biochemical responses to water stress in melon (*Cucumis melo*) subjected to Regulated Deficit Irrigation (RDI) and Partial Root zone Drying (PRD)

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In this study, the impact of two water saving techniques, Regulated Deficit Irrigation (RDI) and Partial Root zone Drying (PRD) was investigated by comparing their impact on the behavior of three melon varieties (*Cucumis melo*), Galia, Jucar and DRG. The morphological, physiological and biochemical responses to the deficit irrigation systems were considered. The results show that both PRD and RDI constraints increase the plants water use efficiency without impairing plants vegetative growth. These treatments reduced the leaf water content and the stomatal conductance without any significant leaf expansion under the water restriction pressure. An increase in the peroxidase activity was recorded under both treatments without having any influence on the activity of polyphenol oxidase. Besides, the application of both treatments had no significant effect on phenolic compounds comparing to the well-watered plants. PRD treated Galia plants performed the better results. These results provide useful knowledge on efficient irrigation and water management systems for melon fruit trees cultivation in particular in the water-limited and environment.

Recent Publications

1. M Lamaoui, S Aissam, S Wahbi, A Chakhchar, A Ferradous, A El Mousadik, S Ibnsouda Koraichi, A Filali-Maltouf and C El Modafar (2015) Antioxidant activity of *Argania spinosa* callus selected under water stress conditions. *Journal of Horticultural Science & Biotechnology* 90(2):127–134.
2. M Lamaoui, M Jemo, R Datla and F Bekkaoui (2018) Heat and drought stresses in crops and approaches for their mitigation. *Frontiers in Chemistry* DOI: 10.3389/fchem.2018.00026.
3. Chakhchar A, Lamaoui M, Aissam S, Ferradous A, Wahbi S, El Mousadik A, Ibnsouda Koraichi S, Filali Maltouf A and El Modafar C (2018) Physiological and biochemical mechanisms of drought stress tolerance in the argan tree. Chapter in *Plant Metabolites and Regulation under Environmental Stress* DOI: 10.1016/B978-0-12-812689-9.00015-7.

Biography

Mouna Lamaoui is a Doctor in Plant Biotechnology. She earned her Bachelor's in Experimental Science, followed by a Mastership Diploma in Plant Biotechnology applied to plant breeding (with honors), then she received a Master's degree in Biotechnology and Sustainable Development of Agro-resources (with honors, major of the promotion), both at Cadi Ayyad University, Marrakech, Morocco. In April 2015, she received the Doctorate Diploma (First class of honors and highly commended). During her thesis she worked on tissue culture, vegetative propagation and selection of argan tree. After defending her thesis, she has had a Postdoctoral Mobility at the Department of Plant Biology and Soil Science at the University of Vigo in Spain, with Erasmus Mundus Action partnerships where she worked on the somatic embryogenesis of grapevine. She also worked at the Department of Biology, Poly-disciplinary Faculty, Cadi Ayyad University at Safi, as part-time Lecturer. She also participated in scientific and pedagogical support within Cadi Ayyad University. Currently, she works as Postdoc Researcher at the Mohammed VI Polytechnic University, to conduct a tissue culture and crop improvement programs of different important Moroccan species.

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