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## **Effect of drought and rewatering on the antioxidant response of *Medicago truncatula* plants**

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Effects of water stress on plants have been well-documented in several reports [1]. However, the combined responses to drought and rewatering and its underlying mechanism are relatively unknown. The present study attempts to describe alterations in the physiology and cellular status of *Medicago truncatula* tissues that result from and subsequently follow a period of moderate water deficit. Physiological processes and cellular damage levels were monitored in roots and leaves by means of spectrophotometric determination of lipid peroxidation, chlorophyll loss and H<sub>2</sub>O<sub>2</sub> content, further supported by stomatal conductance measurements in leaves. During water stress, cells in both organs displayed increased damage levels and reactive oxygen species content, while leaves showed reduced stomatal conductance. Upon rewatering, plants recovered displaying readings similar to pre-stress control conditions. Furthermore, molecular analysis of antioxidant gene expression by quantitative real-time PCR revealed differential regulation in a number of genes examined. Overall, *M. truncatula* plants demonstrated increased sensitivity to drought-induced oxidative damage; however, this was reversed following rewatering indicating a great elasticity in the plant's capacity to cope with free oxygen radicals. Understanding how plants response to episodic drought and watering pulse and the underlying mechanism could prove to be remarkably helpful towards the implementation of vegetation management practices in climatic changing.

### **References**

[1] Farooq *et al.* (2009). *Agron. Sustain. Dev.* **29**, 185-212.

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