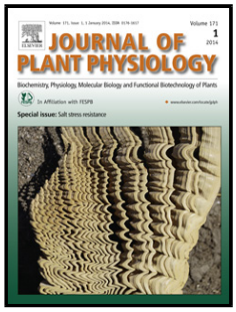

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Responses of seminal wheat seedling roots to soil water deficits

Short title: Wheat seminal roots and drying soil

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Summary

The aims of this paper are to develop our understanding of the ways by which soil water deficits influence early wheat root growth responses, particularly how seminal roots respond to soil drying and the extent to which information on differences in soil water content are conveyed to the shoot and their impact on shoot behaviour. To achieve this, wheat seedlings have been grown, individually for around 25 days after germination in segmented soil columns within vertical plastic compartments. Roots were exposed to different soil volumetric moisture contents (SVMC) within the two compartments. Experiments where the soil in the lower compartment was allowed to dry to different extents, while the upper was maintained close to field capacity, showed that wheat seedlings allocated proportionally more root dry matter to the lower drier soil compartment. The total production of root, irrespective of the upper or lower SVMC, was similar and there were no detected effects on leaf growth rate or gas exchange. The response of seminal