

**Vitamin B6 ameliorates germination and early growth of *Triticum durum* L. under water stress conditions**

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Dryland wheat farming can be heavily dependent on winter precipitation and overwinter water storage in the soil. Low soil water potential limits germination and emergence of rainfed durum wheat (*Triticum durum* L.). In some regions, future water requirements are predicted to exceed water availability. Thus, the identification of methods to enhance germinate and growth under lower water potential is of importance. Vitamin B6 is an indispensable compound for plant survival and is known as a cofactor for numerous central metabolic enzymes and for playing a role in several stress responses, particularly in association with oxidative stress. Seed priming has been described as a cost effective and reliable method to enhance rapid and uniform emergence and to achieve better yields in field crops. Our objective was to quantify and compare seed germination and early growth of durum wheat cv. Marialva primed with vitamin B6 (pyridoxine) under water stress conditions. For this purpose, seeds were hydro-primed (control) and primed with 0.01, 0.1, 1 and 10 mM of pyroxidine solution during 8 hours. Twenty seeds per treatment (×4 repetitions) were placed in 90mm Petri dishes with moisture filter paper with osmotic solutions of polyethylene glycol 6000 of 0 and -1 MPa and germinated in the dark at 25°C. Germination was annotated daily during a period of 8 days. Root and shoot growth, as well as fresh and dry weight, were measured 5 days after germination. Fresh and dry weight and water content showed no significant difference among the primed treatments. Pyridoxine priming at 1mM has shown the biggest mean root and shoot size at 0 MPa, as

well as the biggest mean shoot size at -1 MPa. The Tukey HSD test showed significant differences in the mean shoot size at -1 MPa of the pyridoxine-treated seeds with 1mM when compared with control. However, mean root and shoot size at 0 MPa have not proved significantly different from control. Contrastingly, germination speed was highly influenced by the pyridoxine priming at -1 MPa. Additionally, mean germination speed was decreased c.a. 28%, in seed primed with 0.01mM pyridoxine, till 77% in seeds primed with 0.1mM pyridoxine, when compared with control. These results have practical implications since seed priming with pyridoxine solution seems to enhance germination speed and promotes a more uniform germination of durum wheat in low water conditions.

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