

**SUBMERGENCE EFFECTS ON ANATOMICAL, MORPHOLOGICAL AND BIOMASS
ALLOCATION RESPONSES OF TROPICAL GRASSES *Chloris gayana* AND
Panicum coloratum AT SEEDLING STAGE**

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Tropical grasses like *Chloris gayana* K. and *Panicum coloratum* L., are being introduced in temperate grasslands suffering from flooding of different intensity, which provokes partial and/or complete submergence. Seedlings of *C. gayana* and *P. coloratum* were subjected to control, partial submergence (PS) and complete submergence (CS) for 14 d; and then they were allowed to grow for a subsequent 12 d to appraise their recovery. Root aerenchyma, seedling height, length of leaf blade and leaf sheath, and biomass of shoots and roots responses were assessed. Constitutive root aerenchyma was high and the submergence (PS and CS) increased root aerenchyma. Under PS, both species were able to increase seedling height the same as controls. Under CS, *C. gayana* further increased its seedling height emerging fast from water; while *P. coloratum* was not able to increase its height, and therefore seedlings remained underwater. The escape from water response of *C. gayana* was associated to a preferential biomass allocation towards shoots (discontinuing root growth) and to a marked lengthening of the leaf blades. By contrast, in *P. coloratum* there was no change in allocation between shoots and roots, and its leaves were shorter as consequence of the stressful condition imposed by CS. At the end of experiment, the biomass of *C. gayana* under CS was similar to under PS, and equivalent to 54% of its controls. In *P. coloratum* the final seedling biomass under PS and CS were 64% and 21% of its controls (respectively), which indicates that the negative effects caused by CS persisted up to 12 d of post-submergence period. Conclusions: Both species are tolerant to PS of their seedlings. However by CS, *C. gayana* is able to escape from water while *P. coloratum* is not, which strongly affects its recovery. So, *C. gayana* appears as a more promising species for its cultivation in lowland grassland areas prone to flooding of unpredictable intensity.