

Metabolism of crown tissue in *Lolium/Festuca* grasses under water deficit and recovery conditions

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Physiological and molecular mechanisms involved in plant regeneration after drought cessation have not been fully recognized so far. In monocotyledonous plants, including forage grasses, one of the most important organs associated with this process is thought to be the crown tissue, located between the shoots and roots. This location of the crown makes it a crossroad for various metabolite transport routes. The presented research was focused on the profiling of primary metabolites and lipids in the crown tissue under water deficit and recovery conditions in *Lolium/Festuca* grasses with distinct levels of drought tolerance. The obtained results clearly demonstrated that the accumulation profiles of primary metabolites and lipids in the crown tissue were distinct between the plants with different drought tolerance. The plants with relatively high levels of drought tolerance accumulated higher amounts of primary metabolites, especially carbohydrates in the crown. These compounds could act both as osmoprotectants and as storage materials. On the other hand, the plants with relatively lower levels of tolerance and characterized by higher damage of leaf cellular membranes accumulated membrane phospholipids in the crown tissue. Interestingly, these low drought tolerant plants possessed also the ability to regenerate their cellular metabolism and damaged membranes after stress cessation, to the levels observed in the high drought tolerant plants. The metabolism of crown tissue (Perlikowski et al. 2023) will be discussed with reference to the metabolism of leaves (Perlikowski et al. 2014, 2016 a, b) and roots (Perlikowski et al. 2019) analyzed in the same grass genotypes under water deficit and recovery conditions.

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