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Effect of Defoliation on Carbon Partitioning into Plant Soil Micro-Organisms System of Rye Grass (*Lolium perenne*) Sward

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Consequences of defoliation on C partitioning and C release by roots are contradictory. (Mikola and Kytöviita 2002, Miller and Roses 1992, Paterson and Sim 1999, 2000, Todorovic *et al* 1999). In this context, this work aimed to quantify the effects of defoliation of ryegrass shoots on C partitioning in the plant-soil-micro-organisms system and on the short-term below ground carbon allocation under two N treatments (0 and 100U). After two days, rhizodeposition is not affected by defoliation. Four days after defoliation, a decrease of shoots C content could be explained by a decrease of nutrient assimilation by roots, resulting from root senescence, and reduced photosynthesis. Senescent tissues involve an increase of C availability for micro-organisms, especially under high N. This explain the enhance of the number of culturable cells (as colony forming units CFU), and the non significant increase of micro-organisms activity (test based on the short term utilization of ¹⁴C glucose by rhizosphere micro-organisms). Thus under high N treatment, defoliation involve, after 4 days, an increase of rhizodeposition mainly in the form of sloughed-off cells. Finally, the allocation of current assimilates to plant roots is not affected by defoliation, but roots senescence increase the root released organic C.

Session 2