

Publication

Cell wall hemicelluloses as mobile carbon stores in non-reproductive plant tissues

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 66826**Author(s)** Hoch, G.**Author(s) at UniBasel** [Hoch, Günter](#) ;**Year** 2007**Title** Cell wall hemicelluloses as mobile carbon stores in non-reproductive plant tissues**Journal** Functional ecology**Volume** 21**Number** 5**Pages / Article-Number** 823-834**Keywords** carbon relations, sink-source-activity, storage polysaccharides, structural and non-structural functions

As essential compounds of plant cell walls, hemicelluloses account for about a quarter of all plant biomass worldwide. In seed cotyledons and endosperm of species from several plant families, hemicelluloses are used as mobile carbon reserves. Whether cell wall hemicelluloses of non-reproductive plant tissue are multifunctional molecules, which can also serve as carbon sources during periods of enhanced carbon demand, is still equivocal. This review summarizes the current understanding of a possible reserve function of hemicelluloses. Although several descriptive and experimental studies suggested at least partial mobility of cell wall polysaccharides in mature, non-reproductive plant tissues, there is still a need for a broad-scale, ecophysiological exploration of the actual nature of hemicelluloses beyond their structural function. The chemical heterogeneity of hemicelluloses may be the major problem for precise quantitative analyses on a large, comparative scale. Because of the abundant distribution of hemicelluloses in plants, the existence of a significant mobile carbohydrate pool in cell walls of non-reproductive organs would shed rather new light on plant carbon relations in a source-sink context. Consequently, a reserve function of hemicelluloses questions the conventional division of cell compounds into structural (i.e. immobile) and non-structural (i.e. mobile) compounds.

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