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Recent advances in the long-distance transport of sugars by the phloem and consequences on source-sink relations

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The distribution of photoassimilates in the plant relies on the phloem functions from source to sink organs. Phloem sugar transport is regulated by SUC/SUT and SWEET sugar transporters. We observed that deregulation of SUT1 or SUT2 in Tomato lines had various consequences on plant growth, sugar phloem transport rate and phloem sap composition. Similar effects were observed in response to the deregulation of SUC2 in Arabidopsis mutants and impairs source-sink relations, with consequences on root development and leaf evapotranspiration. Meanwhile, we observed natural variations in the metabolite profiles of phloem exudates of Arabidopsis accessions grown in low or non-limiting N supply. Ectopic deregulation of SUC2 in Arabidopsis impairs source-sink relationships, with consequences on root development and evapotranspiration from the leaf. Nutrient phloem transport thus also depends on downstream regulation of the central metabolism and water fluxes.

Références :

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