

Publication

Surplus carbon drives allocation and plant-soil interactions

JournalItem (Reviews, Editorials, Rezensionen, Urteilsanmerkungen etc. in einer wissenschaftlichen Zeitschrift)**ID** 4613098**Author(s)** Prescott, Cindy E.; Grayston, Sue J.; Helmissaari, Heljä-Sisko; Kaštovská, Eva; Körner, Christian; Lambers, Hans; Meier, Ina C.; Millard, Peter; Ostonen, Ivika**Author(s) at UniBasel** [Körner, Christian](#) ;**Year** 2020**Title** Surplus carbon drives allocation and plant-soil interactions**Journal** Trends in Ecology & Evolution**Volume** 35**Number** 12**Pages** 1110-1118**Mesh terms** Carbon; Carbon Dioxide; Ecosystem; Nitrogen; Plant Roots; Soil

Plant growth is usually constrained by the availability of nutrients, water, or temperature, rather than photosynthetic carbon (C) fixation. Under these conditions leaf growth is curtailed more than C fixation, and the surplus photosynthates are exported from the leaf. In plants limited by nitrogen (N) or phosphorus (P), photosynthates are converted into sugars and secondary metabolites. Some surplus C is translocated to roots and released as root exudates or transferred to root-associated microorganisms. Surplus C is also produced under low moisture availability, low temperature, and high atmospheric CO₂ concentrations, with similar below-ground effects. Many interactions among above- and below-ground ecosystem components can be parsimoniously explained by the production, distribution, and release of surplus C under conditions that limit plant growth.

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