



Water and carbon dynamics in plants - what happens after a drought?

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Climate projections for the future not only predict higher temperatures and frequencies of drought events but also an increase in climate variability. As a result drought and rewetting periods will alternate and the ability of plants to recover after a drought might be as important as resistance during a drought event.

Stable isotope techniques now allow for tracking the water uptake dynamics of plant roots with high time resolution after a rewetting event showing that not only the presence of roots in a given soil horizon but also the changes in uptake activity over time determine the ability of different species to efficiently exploit resources. Moreover, the linkage between water uptake and plant carbon (C) balance allows to understand plant resource allocation and C source-sink relationships. High C allocation to roots indicate that the restoration of processes related to water and nutrient uptake are highly prioritized after drought release.

We propose that the strong interlinkage between carbon allocation within the plant and soil water acquisition after drought release is key for understanding the resilience and recovery of plants under higher climate variability in future.