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## Experimental investigation of the relationship between root:shoot ratio and soil-plant hydraulics.

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In a context of global change, it is crucial to understand the factors and processes by which plants respond to drought and by which crops may limit the development of their aboveground biomass.

Experimental studies have showed that soil water status, soil structure and soil texture impact carbon allocation within plant and in particular the root:shoot ratio. We used a conceptual soil-plant hydraulic model to analyze the results of a meta-analysis gathering literature data of root:shoot ratio measured in controlled conditions. For each paper, information on soil water status, soil and plant traits and abiotic factors were collected. Soil hydraulic conductivity was estimated based on pedotransfer functions, when unavailable.

The results feature that the root:shoot ratio is an adaptation strategy that depends on the soil conductance in order to balance the water availability with the transpiration demand. The partitioning response varies between plant types. This study gives an explanation to current observations and shows the necessity to collect accurate soil measurements and information for further experiments.