6 Decline of leaf hydraulic conductance with dehydration: relationship to leaf size and venation architecture.

Scoffoni C, Rawls M, McKown A, Cochard H, Sack L.
Plant Physiol. 2011 Jun; 156(2):832-43

Joseph Craine, Kansas State University, KS, USA. F1000 Ecology

23 Aug 2011 | New Finding

6 RECOMMENDED

This paper reveals a novel, key correlate with the ability of plants to withstand drought, which is one of the strongest selective forces for terrestrial plants. The authors test key components of leaf venation architecture to understand the underlying leaf structural mechanisms for drought tolerance.

Most work on stems have highlighted xylem geometries, but the authors show that the density of veins in a leaf are the best correlate with its physiological tolerance of drought. The authors use a complementary pairing of modeling and empirical measurements to determine that high vein density provides insurance against embolism and allows water to continue to be supplied to areas adjacent to veins that have experienced embolisms that necessarily accompany low water potentials. As it's been long known that plants from dry areas are more likely to have smaller leaves, the research raises an interesting question as to whether the need for higher vein densities serves as a constraint on leaf size and ultimately contributes to one of the major biogeographic patterns of plant form.

Competing interests
None declared

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