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Physical Limits to Leaf Size in Tall Trees[1] KAARE JENSEN, N. MICHELE HOLBROOK, Harvard University, MACIEJ ZWIENIECKI, University of California, Davis — Leaf size in angiosperm trees vary by more than three orders of magnitude, from a few mm to over 1 m. This large morphological freedom is, however, only expressed in small trees and the observed leaf size range declines with tree height, forming well-defined upper and lower boundaries. We recently showed (Phys. Rev. Lett. **110**, 018104 (2013)) that the limits to leaf size can be understood by physical constraints imposed by the microfluidic sugar transport network. The lower boundary is set by a minimum Péclet number, the upper boundary by a diminishing gain in transport efficiency.

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