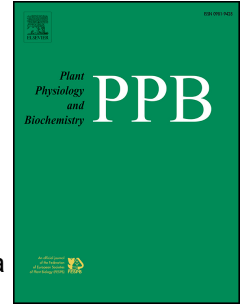


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Pectin and cellulose cell wall composition enables different strategies to leaf water uptake in plants from tropical fog mountain

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14 A B S T R A C T

15 Leaf water uptake (LWU) has been observed in plants of different ecosystems and this process is distinct among  
16 different species. Four plant species from the Brazilian fog mountain fields were evaluated in order to detect if  
17 leaf water uptake capacity is related to the cell wall composition of leaf epidermis. LWU measurements and their  
18 relation to anatomical and biochemical traits were analyzed. Cell wall composition was verified through  
19 immunocytochemistry using monoclonal antibodies recognizing pectin compounds, and histochemistry with  
20 calcofluor white to track cellulose. Differences in LWU among the four species were clearly revealed. Two  
21 species presented higher maximum leaf water content and the lowest values of water absorption speed. The other  
22 two species presented opposite behavior, namely, low leaf water uptake and the highest values of water  
23 absorption speed. The anatomical traits associated with the cell wall composition corroborated the data on the  
24 different LWU strategies. The species with abundant detection of cellulose in their epidermal cell walls absorbed  
25 more water, but more slowly, while those with abundant detection of pectins absorbed water at a higher speed.  
26 These results indicate that cell wall composition regarding pectin and cellulose are significant for water uptake  
27 by the leaf epidermis. Pectin provides greater porosity and absorption speed, while cellulose provides greater

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