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Chlorophyll fluorescence of three Chilean *Nothofagus* (Fagaceae) species – Can we related photosynthetic performance to ecological behavior?

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Evergreen and deciduous *Nothofagus* species are the most important trees of the temperate forest in Chile and Argentina. The photosynthetic performance of deciduous *Nothofagus* species (*N. antarctica*, *N. alpina*, *N. obliqua*) were investigated under similar environmental conditions in a common garden experiment. Chlorophyll fluorescence measurements were carried with a PAM 2100 portable photosynthesis system. The highest electron transport rates of sun-exposed leaves were found in *N. antarctica* with 135.7 – 187.4 $\mu\text{mol m}^{-2} \text{s}^{-1}$, while in *N. alpina* 73.2 – 81.3 $\mu\text{mol m}^{-2} \text{s}^{-1}$ and *N. obliqua* 86.2 – 103.7 $\mu\text{mol m}^{-2} \text{s}^{-1}$. While maximum quantum yield of the photosystem II (Fv/Fm) showed only a small variations among the species. The measured values varied between 0.75 up to 0.78. The photosynthetic performance of the three investigated species correspond with their ecological behavior and with their habitat conditions: *N. alpina* and *N. obliqua* are shade tolerant species that growing in depth and good drainage soils, while *N. antarctica* prefers extreme habitats in open areas with stony or organic soil and with cold, flooding or dry conditions.