

Wood hydraulic conductivity from six Brazilian pioneer/secondary initial and non-pioneers species

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Plant distribution in terrestrial environment is determined by the competition of environmental resources. Anatomical and physiological features for water transportation and gas exchange are essential in the efficiency of photosynthetic processes. In Brazil there are relatively few studies that investigate the adaptive strategies of trees from different ecological groups considering wood anatomy and its relation with hydraulic efficiency. The latter can be determined from dynamic tests or estimated by vessel measuring and then calculation of hydraulic conductivity. Thus, wood structure studies and some properties allow us to understand the adaptation of hydraulic strategies of different ecological groups. Our goal is to determine whether there is any difference in hydraulic conductivity between six Brazilian pioneers/secondary initials and non-pioneers species. We investigated vessel maximum length, percentage of embolized vessels, hydraulic conductivity and wood specific gravity from pioneers/secondary initials species (*Guazuma ulmifolia* Lam., *Inga marginata* Willd. e *Maclura tinctoria* (L.) D.Don ex Steud) and non-pioneer species (*Caesalpinia echinata* Lam., *Cariniana legalis* (Mart.) Kuntze e *Myroxylon peruiferum* L.f.). We carry out ANOVA and multiple comparisons test (Tukey) to detect differences between species, T test to detect differences between successional groups, and regression analysis to verify the relation between hydraulic conductivity and other variables. Successional groups did not differ in vessel maximum length. Non-pioneer species have higher percentage of embolized vessels and higher specific gravity.

Pioneer species showed higher hydraulic conductivity than non-pioneers. Vessel maximum length related positively with hydraulic conductivity in both successional groups. However the percentage of embolized vessels related negatively. Specific gravity related positively with hydraulic conductivity in non-pioneer species (PIBIC/CNPq).

Keywords: wood anatomy, physiology of trees, ecological groups and water transportation.