Eucalyptus urophylla SEEDLINGS CAN HAVE MORE ROOT HYDRAULIC CONDUCTIVITY AND REDUCED MIDDAY DEPRESSION OF PHOTOSYNTHESIS THAN CUTTINGS

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Eucalyptus seedlings can be produced by seeds or by cloning. In Brazil, still prevails plantations with seedlings formed by seeds. However, the clonal seedlings cultivation has been widely used because this type produces homogeneous plantations of great interest to the industry. As the root hydraulic conductivity is an important factor in providing water to the shoot and can interfere with the plant growth and productivity, this work aims to evaluate if the propagation method interferes with the hydraulic conductivity of Eucalyptus urophylla root, as well with gas exchange assessed at higher water demand time (12 to 14h). The experiment was conducted in Campos dos Goytacazes - RJ, at greenhouse in the period from November to February 2016. 24 eucalyptus seedlings were produced: 12 seminiferous and 12 cutting. Along the experiment, growth measures and SPAD were realized. Subsequently, the difference in gas exchange values (net photosynthetic rate (A), transpiration (E) and stomatal conductance (gs) between 8h and 12 h, conductance and root hydraulic conductivity (expressed on root dry matter), chlorophyll a fluorescence emission (ratio Fv / Fm and PI) plant height (h), leaf area (LA), root volume (RV) and root dry weight (MSR) were evaluated. The experiment was conducted in a completely randomized design and the data were evaluated according to Tukey at 5% probability. Compared to the seedlings propagated by cuttings, the plants from seeds showed higher h, VR, conductance and root hydraulic conductivity. There was no significant difference from the other growth measures. Photosynthesis (A), stomatal conductance (gs) and transpiration (E) for 12h reduced 29.97%, 49.67%, 28.58% compared with 8h in plants propagated by seeds and 78.76%, 79.05% and 46.22% in the seedlings with the original cutting propagation, respectively. Therefore, it is concluded that in the plants propagated by seeds, the lower gas exchange decrease at noon (hottest time of the day) can be related with the greater conductance and root hydraulic conductivity in seedlings.

Keywords: Eucalyptus, seedling production, water.