storage tissues in the stems to the xylem conduits. Here, we used transcriptomic and proteomic approaches to evaluate whether Eucalyptus globulus and Eucalyptus grandis have different aquaporin expression in the stems when submitted to 10-12 °C and 33-35 °C and consequent high transpiration at higher temperatures. The first species is well adapted to cold climate with low transpiration demand. The plants were watered well. Seven aquaporin genes were up-regulated in *E. globulus* (PIP1;2, PIP2;7, PIP1;4, PIP2;1, TIP1;3a, TIP1;3b, and TIP2;1) and three were down-regulated (PIP2;5, PIP2;2, and PIP2;6). These are indeed expressed in low temperature conditions according to the literature. Seven proteins identified here matched the transcriptome study. Any aquaporin was differentially expressed in *Eucalyptus grandis* — a species that is well adapted to hot climates. Non-extreme temperatures were used, and the plants were kept well-watered. Thus, we show that the differential expression might be more related with xylem tension generated by transpiration demand. Thus, our results suggest that aquaporins are involved in the radial transport of water in the stem of *E. globulus*. The aquaporin genes summarized here are potential candidates for further functional studies aiming to detail their contribution to eliminate embolisms.

Keywords: Capacitance, radial hydraulic conductance, embolism cavitation, hydraulics
Acknowledgments: CAPES, CNPq and FAPESP

C06 - Quantification of efficiency photosynthetic in yellow melon (*Cucumis melo* L.) grown under different irrigation depths in the San Francisco Valley

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The objective of this work was to evaluate the efficiency of biochemical agents involved in the photosynthetic activity of the yellow melon cultivated under different irrigation depths, in the Sub-Mid São Francisco River Valley. The experiment was conducted in the experimental field of the Brazilian Agricultural Research Company (EMBRAPA), located of the Irrigated Perimeter of Bebedouro, Petrolina, State of Pernambuco (PE), Brazil. The treatments were arranged in subdivided plots, the plots consisted of four irrigation depths: 60, 80, 100 and 120% of crop evapotranspiration (ETc), the subplots the two crop cycles. The following parameters were evaluated: intrinsic water use efficiency [A/g_s - µmol CO_2 (mol H2O)$^{-1}$], instantaneous water use efficiency [A/E - µmol CO_2 (mmol H_2O)$^{-1}$] and efficiency of the carboxylation (A/C_i - [(µmol m^{-2} s^{-1}) / (µmol mol^{-1})]). In that the highest A/g_s was found in the lowest irrigation depth (60% of ETc), this result probably occurred due to the reduction of transpiration and a lower stomatal conductance, promoting a lower loss of water by the leaves of the melon. However, the highest value of A/C_i was observed in the leaf (120% of ETc), probably due to the increase in stomatal conductance, occurred the increase of the availability of water, due to raising the level of the irrigation should have promoted a greater efficiency of carboxylation, to the detriment of a greater ease of obtaining CO_2 for the effectiveness of the photosynthetic activity. As for the analysis for the cycles, it was verified

that the highest average values of A/g_s were found in the first cycle, differing from A/E and A/C_i values that were higher in the second cycle.
Keywords: Carboxylation, transpiration, stomatal conductance, carboxilation efficiency
Acknowledgments: CAPES, Univasf and Embrapa

C07 - On the consequences of simultaneous changes in water supply and crop load in table grapes

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The objective of this study was to evaluate the interactive effects of water supply and crop load on changes in yield, fruit quality and the physiology of 'Thompson Seedless' grapes (*Vitis vinifera*). A factorial experiment was set in a commercial vineyard, located ca. 40 km towards the north of Santiago, Chile. Treatments were imposed at the beginning of veràison, with three levels of drip irrigation (100, 60 and 20% of reference evapotranspiration, ET_0) and three levels of crop load (full commercial crop load, half of the crop and no crop load). The results indicate that the treatment of 20% ET_0 exhibited statistically lighter clusters and lower total yield than the treatments of 60% and 100% of ET_0. Fruit quality attributes were not affected by the irrigation treatments, but they were modified by the crop load level; full crop load was associated with lower sugar content and smaller berry size. In general, no interaction was found between water supply and crop load. Also crop load but not water supply had a significant effect on midday stem water potential. In this study, the previously reported anisohydric behavior of 'Thompson Seedless' was observed only under the combination of the most severe water deficit and full crop load. The data suggest that the magnitude of midday water potential could be the result of both, stomatal control of water loss and cell wall elasticity of leaves.
Keywords: Crop load, irrigation, grape quality, yield, grape physiology

C08 - Water deficit intensity modulates the aquaporins expression in leaves during rehydration of *Sorghum bicolor*

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Drought is expected to increase in the coming years in agricultural regions. Physiological recovery after plant water deficit is still not well understood, and we tested whether aquaporins are associated with this recovery in *Sorghum bicolor* L. Moech. We hypothesed that aquaporins regulate the leaf water recovery and resumption of stomatal conductance, and this regulation occurs differently between different intensities of water stress. During 20