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Expression of related genes to the response of drought in *Prunus* rootstocks

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Abstract:
Climate change conditions accentuate drought since the reduction of 10% of the precipitation is translated in a reduction of 25% of the soil water. Therefore, it is indispensable the use of adapted rootstocks to water stress conditions. In order to understand their response to drought, physiological and molecular parameters of three *Prunus* hybrid rootstocks, the almond x peach hybrid (*P. amygdalus* x *P. persica*) 'Garnem', their progenies 'P.2175' x 'Garnem'-3 trihybrid (*P. cerasifera* x [*P. amygdalus* x *P. persica*]) and 'P.2175' x 'Garnem'-9 trihybrid were investigated. Plants in pots were subjected to drought conditions (35% water soil content) during one month. Subsequently, plants were submitted to re-watering period. Physiological responses were monitored through transpiration and leaf water potential showing significant differences along the experiment and among the genotypes. Gene expression analysis of four genes coding for proteins related to ABA pathway and abiotic stress were analyzed by RT-qPCR. A dehydrin (ppa005514m), a LEA protein, (ppa008651m), an A20/AN1 zinc finger (ppa012373m), and a bZIP transcription factor (ppa013046m). The profile expression of the four genes showed a correlation with physiological parameters of drought response, being higher in root than in phloem tissue. The zinc finger and bZIP transcription factors showed differences in expression relative to the target genes LEA protein and dehydrin under drought and recovery treatment, showing a regulatory response to water stress in *Prunus* genotypes.

Keywords: ABA, LEA protein, real-time PCR, transcription factors, water stress