



PO0675 Preliminary Study on Genes Involved in Vigor and Development in Prunus Rootstock-Scion Interactions

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Body

For new almond planting, low vigor-conferring scion/rootstock combinations are currently preferred to establish semi-high and super-high density orchards. Thus, breeding for low vigor rootstocks and manageable tree architecture cultivars represent two important challenges. Therefore, we need to understand how the interaction of rootstock vigor and branch architecture affects development and adaption in almond. Previous studies in angiosperms have shown a relation between genes related to floral transition and to vigor. For exploring this interaction, we analyzed phloem tissue of two hybrid rootstocks: 'RootPac-40' and 'Garnem', representing low and high vigor respectively, with and without a scion. The study was conducted through dormancy (November) to floral transition (January and March). Forty-six genes related to developmental processes and hormonal response were selected to study their expression by RT-qPCR using the Fluidigm platform.

During the time course, genes involved in vegetative development were overexpressed, while genes inhibiting growth were repressed, which relates to the resumption of metabolic activity. Expression of auxin-response genes differed between individuals, with higher levels of expression in March in the low vigor rootstock, 'RootPac-40'. In grafted plants, the levels of expression between both rootstocks were similar, which shows the scion involvement in the auxin response. Strigolactone synthesis gene CCD8 was also upregulated in 'RootPac-40' vs 'Garnem' (grafted and not grafted). No difference was observed between rootstocks for genes involved in other hormonal responses, like ethylene and gibberellins. We conclude that the expression of auxin response and strigolactone biosynthesis genes, positively correlated with vigor, is activated early in the dwarfing rootstock 'RootPac-40'.