

The potential role of hormone-related genes in controlling the olive dwarf phenotype observed in 'Koroneiki' F2 progeny.

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Keywords: *Olea europaea*, *in vitro* culture, RNA-seq, dwarf genotypes, breeding.

Olive (*Olea europaea* L.) is one of the Mediterranean's most representative and cultivated fruit crops, due to its numerous advantages on human health and ecological plasticity. Over time, many breeding programs have been conducted to select valuable genotypes with desired traits. However, one of the most important agronomic characteristics that remains a challenge is the identification of low-vigor genotypes suitable for high-density orchard systems. The Department SAAF of the University of Palermo raised an F2 progeny from the selfing of the Greek self-fertile cultivar 'Koroneiki' segregating for a wide range of phenotypes showing low vigour traits, including the dwarf phenotype. The transcriptomic analysis of two genotypes exhibiting contrasting plant height and vigour traits (dwarf vs. tall) was performed. The analysis provided a clear and valuable insight into the understanding of the pathways associated with olive plant vigour and juvenility, confirming that phenotypic differences observed both in the field and *in vitro* are caused by significant genetic differences. The potential involvement of hormone-related genes, in modulating the dwarf traits was observed and this represents a compelling avenue for further exploration. These findings offer great promise for future olive tree breeding programs.