AOX – A potential marker for efficient rooting of olive shoot cuttings.

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Abstract

Olive trees are vegetatively propagated for commercial and breeding purposes through rooting of new shoots. However, an important limitation in propagation comes through the low capacities of diverse valuable olive genotypes for adventitious root initiation. Thus, a direct marker for rooting potential could assist breeding on olive propagation efficiency. Alternative oxidase (AOX) is recently being discussed as a functional marker for efficient cell reprogramming under stress (Arnholdt-Schmitt et al. 2006) and a Marie Curie Chair project was established at the University in Évora, Portugal, to study the relationship between AOX expression and root initiation in olive shoot cuttings. Evidence to support the hypotheses of the project comes from the metabolic role of alternative respiration under stress, the link between AOX activities and differential growth, and the single nucleotide polymorphism recently observed in AOX genes. Basic strategies of this project and the concept of using functional markers in modern molecular plant breeding (Arnholdt-Schmitt 2005a) as an alternative to transgene approaches will be presented.

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