

## A MOLECULAR SURVEY OF OLIVE TREES CULTIVATED IN THE ALTO GARDA TRENTO AREA

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The Alto Garda Trentino area (AGT) is the northernmost part of Europe where the Mediterranean species *Olea europaea* is cultivated. Despite the climatic events in time, the ancient presence of olive-tree in this region is reported by historical documents even though references to the nomenclature of cultivars are lacking.

The quality of the extra virgin olive oil (EVOO) produced in the AGT area is world renowned. The importance of oliviculture in AGT is not quantifiable in absolute terms because in addition to the economic value of the EVOO, its production has a synergistic impact in the tourism sector. The beauty of the landscape and cultural value combine to attract tourism, which underscores the importance of the environmental preservation of the territory.

The aim of the AGRIRIVA project is to establish the varietal composition of the cultivated olive population in the AGT and to elucidate the identity of the varieties by matching the genetic profiles in molecular databases. SSR markers analysis at 19 loci has been performed in about 400 olive-trees cultivated in the AGT or maintained in local varietal collections. In ancient olives, samples from different parts of the tree (branches, suckers, basal sprouts) were collected. Fifteen different genetic profiles were detected within the cultivated population of which only four were common to the local germplasm. The vast majority of the olive-trees sampled in orchards showed the same genetic profile of the centuries-old accessions of Casaliva included in the survey, which suggests a high varietal homogeneity in the area and supports the long historical presence of the genotype on the territory. Different SSR profiles were also detected between branches and the basal part of the tree in a few individuals. Among the many applications of these results, obtaining the genetic reference profiles of the traditional cultivars will enable a controlled process of nursery propagation of the best plants in the area, ensuring the quality of future productions and the enhancement of historical plants. In addition the measure of outcrossing rate based on ungerminated olive seeds collected from the partially self-compatible Casaliva may be applied to locate suitable pollinators among local cultivars.