

CORRELATION BETWEEN MORPHOLOGICAL/MOLECULAR VARIATION AND ECOGEOGRAPHIC DISTRIBUTION OF ALGERIAN WILD OLIVES

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Algeria, oleaster, biodiversity, bioclimatic evaluation, SSR

The increasing challenges, posed by climatic changes and emerging diseases to modern agriculture, require the availability of a large source of genetic variability. In Algeria, olive is an important crop cultivated mainly in the northern part of the Country. While, in the south, occupied by the Sahara Desert, other olive subspecies such as *O. europaea* subsp. *laperrinei* have been discovered. Algerian olive germplasm consists of cultivars still poorly characterized, with only 36 cultivars described in the Algerian catalogue of olive oils, and huge reserves of wild olives which have grabbed the attention as a source of genetic heritage.

Our study analysed 175 wild olive trees, collected in diverse bioclimatic environments in North Algeria including dry and hot climates. The evaluation of 32 morphological olive descriptors and 16 nuclear Simple Sequence Repeats (SSRs) markers showed a large morphological and genetic variability in the oleaster samples. From a morphological perspective, they showed high variation in all traits, in particular fruit and stone weight, and a high positive correlation between fruit weight/width. Cluster analysis separated the samples into two groups mostly based on fruit and stone size, while no relationship was observed with the area of sampling. Only the Saharan samples resulted in significantly different leaf and fruit traits, indicating the potential of the wild trees belonging to this area and the necessity to deeply characterize them in the future. The genetic evaluation supports the wide variability of the Algerian oleaster

collection. Both, the STRUCTURE and Principal Coordinate Analyses (PCoA) allowed the clusterization of genotypes according to their geographic origin and bioclimatic conditions allowing the identification of samples from an area characterized by high temperatures and low precipitation, making them a good source of genes for tolerance to harsh climatic conditions. This germplasm can represent an important resource for breeding purposes and could be useful to preserve genetic diversity from erosion risks.