

MOLECULAR AND PHENOTYPIC CHARACTERIZATION OF POMEGRANATE (*PUNICA GRANATUM* L.) GENOTYPES FROM SOUTHERN ITALY

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Pomegranate (*Punica granatum* L.), one of the oldest known edible fruits, is originating from Persia and surrounding areas and from there it has been spread in many other regions. *P. granatum* is the predominant member of two species comprising the *Punicaceae* family. Pomegranate is one of the richest dietary sources of antioxidant phenols and anthocyanins, and there is a wide variation among genotypes in terms of these compounds. Several studies have been published on the molecular, morphological and biochemical characteristics of pomegranate fruits in various Mediterranean countries, but very little information is available about the genotypes present in Apulia region (Southeastern of Italy), where no hectares result officially under cultivation (ISTAT, 2010).

The objective of the present research was the molecular and morphological characterization of a set of 15 pomegranate accessions collected from different areas of Apulia region. A two-year study (2008-2009) was carried out in order to evaluate morphological and chemical parameters of eight pomegranate genotypes (4 sweet and 4 sour) localized in various home orchards. Fruits were harvested at commercial ripening, between the second half of September and the first half of October. Significant differences were observed among the eight pomegranate genotypes for many of the parameters investigated. In particular, fruit weight ranged from 168.9 g to 574.9 g, °Brix from 14.7 to 18.0, titratable acidity (citric acid) from 5.4 to 25.0 g/L. The examined genotypes also showed high polyphenols (up to 97.1 mg/L) and vitamin C (up to 236.3 mg/L) contents.

For the molecular analysis, it was conducted a preliminary comparative study among different methods for DNA extraction starting from leaf samples derived from the 15 genotypes, then PCR reaction was optimized for the amplification of microsatellite (SSR) markers. A total of 20 SSRs were amplified in the pomegranate collection, and the polymorphic fragments visualized by capillary electrophoresis. The obtained SSR profiles allowed to specifically characterize each genotype, which may represent a useful tool for the screening of pomegranate germoplasm to adopt in breeding programs and as a perspective of further development of pomegranate cultivation in Apulia region.