

MOLECULAR CHARACTERIZATION OF BRASSICA OLERACEA LANDRACES BASED ON SNP MARKERS

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Brassica oleracea is a representative species of the cruciferous family, which includes a remarkable variety of types used as vegetables. Numerous studies on *B. oleracea* have demonstrated its high nutraceutical value thanks to the production of numerous bioactive compounds beneficial to human health. The genotyping-by-sequencing (GBS) approach allows high-throughput, robust and cost-effective characterization of single nucleotide polymorphism (SNP) markers in germplasm collections.

Within the frame of the projects BiodiverS0 and BiodiverS0 VEG” (PSR Puglia 2014-2020, Mis. 10.2), several landraces of *B. oleracea* have been collected in the Puglia region, of which the subspecific taxonomic identification is not certain. GBS can be a useful tool to evaluate the genetic relationships between local varieties and known commercial cultivars.

In this study, GBS was applied to a collection of 84 *B. oleracea* genotypes including broccoli (var. *italica*), cauliflowers (var. *botrytis*), cabbages (var. *capitata*), kales (var. *alboglabra*), and Brussel sprouts (var. *gemmifera*). A representative portion of the *B. oleracea* collection consisted of local material from Puglia. The genetic structure of the germplasm collection was studied and the genetic relationships between the different taxa, landraces, and commercial cultivars of *B. oleracea* from Italy and other countries were evaluated. The results of this research showed that the SNP markers obtained through GBS were able to discriminate between the varieties and allowed the attribution of a taxonomic ranking of the local germplasm analysed.