

MOLECULAR CHARACTERIZATION OF SPANISH ONION (*ALLIUM CEPA* L.) LANDRACES AND RELATED *ALLIUM* USING MICROSATELLITE MARKERS

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Onions (*Allium cepa* L.) are the second most valuable vegetable in the world. Despite its global culinary and economic significance, knowledge about onion genetic diversity and resources is limited. The Vegetable Germplasm Bank of Zaragoza (BGHZ) (Spain) holds an important *Allium cepa* L. collection, where most of the Spanish onion variability is represented. In order to investigate the diversity of Spanish onion germplasm, a total of 85 Spanish onion landraces (*Allium cepa* L.) and 6 related *Allium* outgroups (*A. cepa* L. *aggregatum* group, *A. schoenoprasum*, *A. christophii*, *A. sphaerocephalon*, *A. ramosum*, and *A. senescens*) from the BGHZ collection were studied by means of SSRs markers. Results showed that 12 from the 18 SSRs markers amplified were useful and polymorphic to distinguish all the studied accessions, being 11 SSRs of them polymorphic for onion landraces. Within onion accessions, the variation for allele size ranged from 172 to 299 bp. The total number of detected alleles was 47, ranging from 2 for ACM006, ACM124, ACM146, and ACM235 to 7 for ACM045, with an average of 3.9 alleles per locus. Within related *Allium* accessions, the variation for allele size ranged from 158 to 299 bp. The total number of detected alleles was 45, ranging from 1 for ACM006 and ACM124 to 10 for ACM300, with an average of 3.75 alleles per locus. The resulting UPGMA dendrogram grouped the 91 *Allium* accessions according to their taxonomical classification, producing 6 main clusters. Besides, within *A. cepa* cluster, the *cepa* group (onions) and the *aggregatum* group (shallots) were correctly separated in two neighbour clusters. Most numerous cluster corresponded to onion landraces and was divided in seven subgroups, distinguishing all the accessions. The range of genetic distance was 0.69 – 0.95. The subgroups were not clearly defined according to most relevant onion characteristics or their specific origins. The molecular variability detected in this study agrees with the fact that Spain is part of the secondary centre of onion diversification. This is the first study on genetic diversity assessment involving Spanish landraces.