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Integrated molecular and morphological characterization of *Daucus* in Tunisia

Daucus carota L. is a morphologically diverse species found throughout the Mediterranean regions and in many continents worldwide. Despite the genus *Daucus* has been described and revised several times, the taxonomy of *D. carota* L. remains difficult and unresolved. Among Mediterranean regions, Tunisia is considered a center of diversity for *Daucus* and many other crops because of the diverse ecosystems and climatic conditions. A collection of 160 *Daucus* accessions from Tunisia including cultivated carrot (*D. carota* subsp. *sativus*) and wild relatives were morphologically characterized using international descriptors and common taxonomic criteria. Fifty one *D. carota* accessions out of the whole collection were genotyped using Genotyping by sequencing (GBS) technology and compared to a worldwide collection. Morphological characterization

showed that fruit characters were efficient to identify different species in the collection whereas leaves, stems, and flowers were required to distinguish among closely related *D. carota* subspecies. GBS analysis based on Maximum Likelihood method showed a grouping of the accessions according to their geographic origin. Specifically all Tunisian wild *D. carota* members resolved in a same clade with the immediately adjacent western Libyan and mainland Italian. Comparison of the morphological and molecular results demonstrated concordance of grouping the taxa at specific level, but great discordance of grouping within taxa suggesting that while morphology is useful to group germplasm at the species level, GBS data are required to accurately make identifications at the subspecies level.

Biography

Najla Mezghani is an assistant professor in the National Gene Bank of Tunisia since 2008. She has her expertise in plant biotechnology and genetics. She is working in the field of plant genetic resources and she is particularly responsible of the Vegetable, condiment and ornamental genetic resources conservation. She has published more than 20 papers in peer reviewed journals and she is serving as a reviewer for several reputed journal.

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