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Description and analysis of phenotypic diversity in *Daucus L.* germplasm collection in Tunisia for species and subspecies identification**Najla Mezghani^{1,4}, Jihene Ben Amor², David M Spooner³, Phillip W Simon³, Neila Mezghani¹, Slim Rouz⁵, Cherif Hannachi², Mohamed Neffati⁶ and Neji Tarchoun²**¹Banque Nationale de Genes, Tunisia²Institut Supérieur Agronomique de Chott Mariem, Tunisia³University of Wisconsin, USA⁴TELUQ University, Canada⁵Institut Supérieur Agronomique de Mogran, Tunisia⁶Institut des Régions Arides, Medenine, Tunisia

Statement of the Problem: *Daucus carota L.* is a morphologically diverse species found throughout the Mediterranean regions and in many continents worldwide. Among Mediterranean regions, Tunisia is considered a center of biodiversity for *Daucus* and many other crops because of the diverse ecosystems and climatic conditions. Although some floristic treatments have been published in the past few decades, many of *Daucus* species are without an adequate description. The purpose of the present study is to analyze the patterns of phenotypic diversity in a Tunisian *Daucus* collection in order to elucidate the interrelationship between the conserved accessions and to verify the suitability of morphological characterization for species and subspecies identification in our collection.

Plant Material & Methodology: A total of 120 *Daucus* accessions including cultivated carrot (*D. carota* subsp. *sativus*) and wild relatives from different geographic and bioclimatic regions in Tunisia were surveyed and characterized morphologically using 30 qualitative parameters related to vegetative and reproductive parts of the plant. Quantification of variability for each character was investigated using the standardized Shannon–Weaver diversity index (H'). Diversity was established by multiple correspondence analysis and cluster analysis.

Findings: The estimated H' index ranged from monomorphic for umbel type and position of involucre bracts on primary umbel to highly polymorphic for other traits. The highest (0.99) and the lowest (0.24) H' values were recorded for flowering pattern within plants and foliage coverage traits respectively. Multivariate analysis and cluster analysis permitted the subdivision of the *Daucus* collection into 9 distinct groups supporting traditional taxonomic treatments with a distinction of cultivated carrot from the closely related wild species.

Conclusion: Morphological data provide considerable information that is useful to distinguish species and subspecies in the difficult *Daucus* genus. Our results serve as a basis for verification and possible reidentification of *Daucus* accessions in Tunisia and elsewhere.

Biography

Najla Mezghani is an Assistant Professor in the National Gene Bank of Tunisia. She has her expertise in Plant Biotechnology and Genetics. She is working in the field of Plant Genetic Resources and is particularly responsible for the 'Vegetable, condiment and ornamental genetic resources conservation and evaluation' program.

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