

**MORPHOLOGICAL AND MOLECULAR CHARACTERIZATION OF  
CELERY LANDRACE FROM CENTRAL ITALY, *APIUM GRAVEOLENS* L.  
VAR. *DULCE* (MILLER) PERS.\***

G. CASTELLINI, R. TORRICELLI, E. ALBERTINI, M. FALCINELLI

Department of Plant Biology and Agro-environmental and Animal Biotechnology, University of Perugia, Borgo XX Giugno 74, 06121 (Italy) - torricel@unipg.it

*biodiversity, landrace, Apium graveolens, AFLP, cluster analysis*

Reducing biodiversity between and within species is one of the most worrying environmental problems. Landraces are a precious repository of valuable traits and genetic diversity. A new studied landrace of *Apium graveolens* L. var. *dulce* (Miller) Pers. is well-known like “black celery from Trevi”, registered in the list of typical local products from the Umbria region (Italy). The name *black* of this celery comes from the wild physiological trait to maintain green rib colour (not self-blanching) if not subjected to agronomic whitening treatment. The objective of this study was to genetically characterize both morphologically and molecularly this celery landrace from the several *élite* celery varieties cultivated within the Trevi valley. This was done by using the UPOV (*Union Internationale pour la Protection des Obtentions Végétales*) guidelines for morphological characterization and Amplified Fragment Length Polymorphism (AFLP) markers. Genetic relationships were estimated in six accessions of black celery and four *élite* celery varieties. Celery wild relative, *Apium nodiflorum* (L.) Lag., and the related species *Petroselinum sativum* Hoffm. (parsley) were also analyzed. Morphological characterization of celery accessions was carried out in Trevi during summer 2004. The on farm field trial was made using a randomized blocks strategy with four replicates (sixteen plants for each plot). Morphological distances among populations were estimated employing nine quantitative and four qualitative traits. For each accession, 5 DNA bulks were created and used for AFLP analyses using 9 *EcoRI/MseI* primer combinations. A total of 568 bands were detected, of which 305 (53.7%) were polymorphic. Polymorphic AFLP fragments used to calculate the Jaccard’s coefficient of genetic similarity. Morphological and molecular datasets were also used to perform Univariate (ANOVA, *ANalysis Of VAriance*) and multivariate (PCA, *Principal Component Analysis* and PCORDA, *Principal COORDinates Analysis*; UPGMA, *Unweighted Pair Group Method with arithmetic Average* and AMOVA, *ANalysis of MOlecular VAriance*) statistical analysis. The six landraces populations were separated from the cultivars and showed to belong to the same cluster and each of them was distinguished from the other landraces populations. The germplasm of *A. nodiflorum* and *P. sativum* is distinct from the cultivated celery forms. All celery germplasm has been collected and preserved (*ex situ* conservation). Broadening of celery collections in genebanks and detection of new genetic resources are vital for improvements in celery breeding. *On farm* conservation of celery landraces is essential to protect biodiversity.

\* Research project funded by Regione dell’Umbria, Programma Interregionale “Sviluppo rurale” – Sottoprogramma “Innovazione e ricerca - Azioni di Innovazione e ricerca a supporto del Piano sementiero”