GENETIC DIVERSITY IN ITALIAN PEPPER (*CAPSICUM ANNUUM* L.)
GERMPLASM AS REVEALED BY AFLP MARKERS


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Most of the Italian pepper (*Capsicum annuum* L.) varieties have an extremely limited geographic distribution and show adaptation to local pedo-climatic conditions.

We applied AFLP (amplified fragment length polymorphism) markers to assess genetic variation among 20 local varieties (i.e. ‘Braidese’, ‘Cancaricchio’, ‘Ciliegia’, ‘Ciliegino’, ‘Corno calabrese’, ‘Corno di Carmagnola’, ‘Corno di toro’, ‘Corno pescarese’ ‘Cuneo’, ‘Friarè’, ‘Friariello’, ‘Lombardo’, ‘Marconi’, ‘Naso di Cane’, ‘Nocera’, ‘Quadrato d’Asti’, ‘Quadrato di Carmagnola’, ‘Roggianese’, ‘Senise’, ‘Sigaretta di Bergamo’) representative of the germplasm at present in cultivation, together with one commercial variety (i.e. California Wonder) and three Bolivian accessions of *Capsicum chinense* Jacq. In most cases two provenances per variety were considered for a total of 31 accessions. Within each accession three plants were analysed.

Nine AFLP primer combinations were applied. Genetic similarities were calculated according to Jaccard’s Similarity Index and used to construct a dendrogram based on the unweighted pair group method (UPGMA) using arithmetic averages.

Varieties could be uniquely identified and, apart from the Cancaricchio’s provenances, accessions within the same variety were always distinguishable; thus, adaptation to local conditions and/or selection criteria adopted in different areas have been responsible of some genetic differentiation. In most of cases plants within the same accession might be also fingerprinted.

Two main clusters were identified. The first one included varieties with long-sharpened berries, while the second one the varieties with medium-elongated and blocky fruits. Clusters at different degree of genetic differentiation were formed by the ‘Lombardo’, ‘Sigaretta’ and ‘Friarello’ producing conic-elongated berries.

Our molecular data well correlate with known pedigree data and demonstrate that AFLP analyses were successful in detecting genetic diversity and determining genetic relationships in Italian pepper germplasm. AFLP data might contribute in: (i) identifying efficient strategies to manage germplasm ‘core collections’, (ii) spotting suitable material for future breeding efforts, (iii) fingerprinting local varieties for their commercialisation as Geographically Indicated Product.