

MANDOLINO, GIUSEPPE, WALTER BOSCHETTI and ENRICO BIANCARDI. Istituto Sperimentale per le Colture Industriali, Viale Amendola 82, 45100 Rovigo, Italy. Use of RFLP markers in the analysis of genome diversity within the genus *Beta*.

In this work, it was performed an analysis of the genetic diversity between seven subspecies and species of the genus *Beta*, belonging to the Sections Beta and Procumbentes, the two most important for breeding purposes. About 200 genomic clones deriving from a *Beta vulgaris* plasmid library (prepared from total DNA of the CMS line MS2R) were screened using as probes total genomic DNAs digested to completion with *Sau3A* from *Beta vulgaris*, *Beta vulgaris* ssp. *maritima*, *Beta macrocarpa*, *Beta patellaris* and *Spinacea oleracea*, in order to identify the extent of the differences in the hybridization signals, and possibly subspecies-, species- and Section-specific probes. Different classes of genomic probes were identified according to the strenght of the hybridization signals in dot blot experiments, and these probes were subsequently used in Southern blots experiments. The Southern analysis was carried out using both high resolution denaturing polyacrilamide gels (4%) to separate restriction fragments generated by four-cutter enzymes, and agarose gels (1%) for the separation of DNA fragments generated by six-cutter enzymes. In total, 27 enzyme-probe combinations giving readable patterns were tested, and for these, 239 markers were scored for seven subspecies and species of the genus *Beta*; the same probes were also used to fingerprint the genomic DNA of the two related genera *Spinacea oleracea* and *Chenopodium quinoa*. The RFLP data were transformed into matrix data, and dendrograms were constructed based on the similarity matrix using the UPGMA method and the software NTSYS. A number of species-specific and Section-specific probes were found; in the latter case two genomic probes corresponding to highly repeated DNA in the Section Beta, failed to give any hybridization signal for the Section Procumbentes.