IDENTIFICATION OF UNREDUCED GAMETE ORIGIN IN CITRUS INTERPLOID CROSSES (2X X 4X) BY MEANS OF SSR MARKERS


*) Dipartimento S.En.Fi.Mi.Zo. - Sez. Patologia Vegetale e Microbiologia Agraria, Università degli Studi di Palermo
**) Istituto di Genetica Vegetale, CNR, Corso Calatafimi 414, 90129 Palermo
***) ENEA C.R. Casaccia Plant Genetics and Genomics Section (026), S.M. di Galeria (Roma)
****) Dipartimento di Scienze Animali, Vegetali e dell'Ambiente, Università degli Studi del Molise, Via De Sanctis, 86100 Campobasso

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One of the most important goal in Citrus genetic improvement is the obtainment of seedless cultivars. Among the available strategies, we used the accomplishment of suitable interploid crosses (2X x 4X). To this purpose, three allotetraploid somatic hybrids have been used as pollen parent in sexual crosses with diploid ‘Femminello’ lemon, and autotetraploid ‘Dancy’ mandarin as pollen parent in crosses with diploid grapefruit and mandarin. From flow cytometry, among the 158 analyzed genotypes, 14 tetraploid genotypes were detected. We tested SSR analysis coupled with capillary electrophoresis fluorescence-based technology for the analysis of tetraploid genotypes; all the tetraploid plantlets showed genetic segregation compared to parent genotypes, confirming their zygotic origin. To understand the opportunity to use these tetraploid hybrids for further genetic studies, it has been necessary to identify the cytological mechanisms underlying the ploidy level (4x) in the obtained progeny. A better understanding of micro and macrosporogenesis process is important to clarify the ploidy level in the progenies. By the whole of the analyzed tetraploid hybrids, we found that diploginy (diploid ovule development) has occurred. Therefore, the analyzed tetraploid hybrids with their improved genetic female background (diploid ovule) can be considered very useful in our citrus genetic development program; moreover, the obtainment of tetraploid hybrids allow a greater number of back crosses useful to eliminate negative traits.