## Poster Abstract - C.51

## MOLECULAR CHARACTERIZATION OF NEW CITRUS TETRAPLOID HYBRIDS BY MEANS OF SSR MARKERS

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One of the most important goal in Citrus genetic improvement is the obtainment of seedless cultivars. Among the available strategies to generate seedless cultivars, the most used one takes into account the accomplishment of suitable interploid crosses (2X x 4X). In Palermo, at the Research Division of the Institute of Plant Genetics, advanced breeding techniques were applied to foster the raising of seedless cultivars in lemon (1) and mandarin (2); the following crosses have been planned: (1) three allotetraploid somatic hybrids (4X), "Milam (purported hybrid of Citrus jambhiri Lush) + Femminello (C. limon L. Burm. f.)"; "Valencia (C. sinensis L. Osbeck) + Femminello"; "Key lime (C. aurantifoglia Swingle) + Valencia") have been used as pollen parents in crosses with diploid 'Femminello' lemon (2X); (2) autotetraploid (4X) 'Dancy' mandarin (C. reticulata Blanco) was used as pollen parent in four crosses. respectively with: 'Duncan' grapefruit (C. paradisi Macfadyen), 'Wilking', 'Ortanique' and 'Fortune' mandarins (C. reticulata Blanco). To recover zygotic embryos, the embryo-rescue technique was applied 105 days after pollination. In order to distinguish 3X zygotic embryos from nucellars (2X), ploidy discrimination on all the recovered plantlets was accomplished by flow cytometry. Surprisingly, among the analyzed plants tetraploid genotypes were found. To try to understand their genetic origin, microsatellite analysis (SSR-Simple Sequence Repeats) was carried out. 7 SSR primers showed that the parental plants were heterozygous for at least two alleles (named high and low according to their molecular size), which were expected to segregate in a mendelian fashion in the sexual progeny. Some of the tetraploid plantlets showed genetic segregation for both loci, confirming their zygotic origin. To explain the obtainment of a tetraploid progeny in interploid crosses (2Xx4X), two hypothesis can be advanced: a) unreduction of megaspore; b) anomalies in the microsporogenesis process and/or zygotic formation.