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Poster Abstract - C.58

MICROSPOROGENESIS BEHAVIOUR OF A TRIPLOID LILY

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The genus *Lilium* includes approximately a hundred species classified into seven Sections. This germplasm represents an important source of useful genes as well as a "reservoir" of allelic diversity for breeding purposes. However, gene introgression through the wide interspecific hybridization is hampered by incompatibility barriers at pre- and post-fertilization levels including F_1 hybrid sterility. In this context, meiotic nuclear restitution events, and 2*n*-gametes with various modes of origin can be crucial for breeding strategies based on wide hybridization.

In this work, a screening of *Lilium* genotypes for nuclear restitution events in microsporogenesis was performed through the analysis of chromosome number, pollen stainability and meiosis.

Chromosome number and pollen stainability have been evaluated in *Lilium* L. species (*L. formosanum, L. miryophillum, L. regale*), and in cultivars coming from Asiatic (Elite, Pollyanna, Vivaldi) and Oriental hybrid group (Cascade, Casablanca, Galilei). All the genotypes resulted diploid ($2n=2x=24$) except cv. Elite which was triploid ($2n=3x=36$). The pollen stainability ranged from 90 to 98% among diploids and from 80 to 90% in the triploid which exhibited pollen grains of different size, as well.

A detailed analysis of microsporogenesis was carried out in the triploid cultivar. The chromosome associations at diakinesis were either trivalents or bivalents and univalents. Anaphases I and II exhibited lagging chromosomes and unequal distribution of chromosomes at the two poles. Single and double bridges plus acentric fragments formed possibly due to a paracentric inversion.

Meiotic nuclear restitution mechanisms occurred following the failure of the reductional wall or, alternatively, of the equational wall. The analysis of sporads evidenced tetrads as well as dyads, triads and rare monads and poliads. In conclusion, the identification of restitution mechanisms reinforce the importance of 2*n* gametes for *Lilium* breeding.