

Invited keynote lecture

LILIUM: BREEDING HISTORY OF THE MODERN CULTIVAR ASSORTMENT

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During the last 50 years the lily has become worldwide one of the most important flower bulbs and cut flowers. They are mainly cultivated in the Netherlands with a bulb acreage of more than 5000 ha. The assortment of lilies consists of thousands of cultivars which can be classified in different hybrid groups. The genus *Lilium* consist of about 80 species ($2n=2x=24$) which can be classified in 7 sections. The first hybrids originated from interspecific crosses within species of the *Sinomatagon* section (*Lilium davidii*, *L. wilsonii*, *L. bulbiferum*, *L. dauricum*, *L. tigrinum*, *L. cernuum*, *L. leichtlinii* var. *maximowiczii*, and *L. amabile*). All hybrids developed from species within this section are called Asiatic hybrids. They exist in all colours varying from orange, red, yellow, white till pink and have mostly upfacing flowers. The first commercially important hybrid group was called the midcentury hybrids, developed by Jan de Graaff. The most important representant from this group was 'Enchantment' of which in the seventies more than 1000 hectares were grown in the Netherlands. In this group the first polyploid (triploid and tetraploid) lilies were introduced. Nowadays most of them are polyploid. Through interspecific hybridization in the *Archelirion* section the second important hybrid group, the Oriental hybrids was developed a few decades later from species crosses with *L. auratum* and *L. speciosum*. These lilies with large, exotic, mainly pink and white flowers became the most important hybrid group during the nineties. 'Stargazer', the first upfacing Oriental hybrid, was for more than 25 years the topper in this group. A third group of hybrids, the LA or longiflorum x Asiatic hybrids, was developed, two decades after the Oriental hybrids, by interspecific hybridization between hybrid groups of different sections. This type of intersectional crosses is only possible using specific pollination and embryo rescue methods. The ploidy level of these lilies is triploid, since they are backcrosses from a F1 LA-cross with an Asiatic hybrid. During the last ten years this group became more important than the Asiatic hybrid group. In a similar way, using the modern breeding methods more intersectional, mostly triploid hybrids are bred, like the LO (longiflorum x Oriental), OT (Oriental x Trumpet) and OA (Oriental x Asiatic) hybrids. Like the LAs have replaced for a great deal the Asiatics and the LOs the Longiflorums, it can be expected that in the future the Orientals will (partly) be replaced by the OTs. Finally for the future besides, the development of the seven main hybrid groups (O, A, L, T, LA, LO and OT) a number of other species have been used successfully. These species like *L. candidum*, *L. henryi*, *L. rubellum*, *L. martagon*, *L. hansonii*, *L. nepalense*, *L. pardalinum* and *L. canadense* gave rise to new intersectional hybrids which could enrich the assortment (in the future) with new characters. The characteristics of the most widely grown cultivars will be given.