

Studies on the usage and development of genetic resources of native Taiwan lilies¹

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summary

Interspecific hybridization had been done between lilies to combine both characteristics. *Lilium formosanum* Wall. and *L. longiflorum* Thunb., native in Taiwan, were used as mother plants, and 12 Asiatic as well as 2 Oriental hybrids were used as pollen plants. To overcome pre-fertilization barriers, cut style pollination was applied in *L. longiflorum*. The enlargement of pollinated ovary can be used to determine crossing compatibility. Fifty nine flowers of *L. formosanum* were pollinated, but only 22 ovaries increased the size and developed into fruits. On the other hand, 260 flowers of *L. longiflorum* had been pollinated, but only 4 ovaries enlarged. This implies that *L. formosanum* has better crossing compatibility than *L. longiflorum*. One fruit of *L. formosanum* × Dreamland (Asiatic) got 332 seeds with embryos, and 100% of those seeds germinated under 18 incubator; however, all of the other fruits are non-embryo seeds. Embryo abortion or degeneration might take place during seed growing, thus caused postfertilization barriers, and got seeds without embryos. To rescue abortive embryos, fruits were harvested 40-43 days after pollination, and the ovules placed on MS(1962) medium supplemented with NAA(0.01mg/l), sucrose (3%), and bacto-agar (0.8%) at pH 5.5. Ovules germinated by producing a real seedling, or regenerated adventitious shoots via callus formation, or via embryogenesis. Two combinations, *L. formosanum* × Avignon and *L. Longiflorum* × San Francisco, were successfully got hybrid progenies by this method.

(Key words: *Lilium formosanum* Wall., *L. longiflorum* Thunb., Asiatic and Oriental hybrids, Hybridization, Ovule culture)

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