



# Genetic variability and diversity of the main resources of lily assessed via phenotypic characters, pollen morphology, and ISSR markers

J.M. Wang\*, S.L.Y. Ma\*, W.Q. Li, Q. Wang, H.Y. Cao, J.H. Gu and Y.M. Lu

College of Landscape Architecture, Beijing Forestry University, Beijing, China

\*These authors contributed equally to this study.

Corresponding author: Y.M. Lu

E-mail: luyingmin@bjfu.edu.cn

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**ABSTRACT.** Lily (*Lilium* spp), which belongs to *Lilium*, is one kind of monocotyledon. As a perennial ornamental plant with extremely high esthetic, edible, and medicinal value, lily has gained much favor due to its mostly showy flowers of various colors and elegant shape. In this research, we studied experimental materials in a sample of 49 individuals including 40 cultivars, nine species of wild lily, and their variants. The collection of 40 cultivars covered all six hybrids in the genus, i.e., Asiatic hybrids, Oriental hybrids, Longiflorum hybrids, LA hybrids, LO hybrids, and OT hybrids. Genetic diversity and inter-relationships were assessed through analysis of phenotypic characteristics, pollen morphology, and ISSR molecular markers. Quantitative characters were selected to analyze phenotypic variation, with results indicating greater variability in petiole length as compared to other characters. Pollen morphological observations suggested that the largest variation coefficient between all hybrids and wild species was the lumina. ISSR makers demonstrated that both cultivars

and wild species possess a high level of genetic diversity. Specifically, the genetic diversity of wild lily was higher than cultivars.

**Key words:** Lily; Genetic diversity; Phenotypic characters; ISSR markers; Pollen morphology