

# Postharvest of *Lilium*: experiment to industry adaptation

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## Abstract

While lilies are the fourth cut flower in the world and an important potted plant, much remains to be discovered about their postharvest physiology and characteristics. Lilies have two main postharvest issues: floral longevity and foliar chlorosis. Inclusion of sugar in the vase solution invariably improves flower life (individual flowers and the entire inflorescence), but sometimes increases leaf yellowing. Aside from possibilities in breeding longer lasting cultivars, a number of technologies have emerged for maximizing postharvest quality, among them refrigeration, application of gibberellin-containing hormones and anti-ethylene treatments (for both pot plants and cut flowers) and inclusion of carbohydrates in cut flower vase solutions. We have found that storage temperature differentially influences bud life based on bud age at the time of storage: warmer storage temperatures (e.g., 7°C vs. 1°C) are beneficial in promoting opening of smaller buds, but often detrimental to life of larger (older) buds. During postharvest evaluation, an analysis of the extent of leaf senescence should also be made, as leaf chlorosis, (commonly associated with cold storage), is often more limiting to display life than flower senescence per se. Gibberellin ( $GA_{4+7}$ ) is routinely used in industry to combat leaf chlorosis in both potted plants (as a foliar spray) and cut flowers (as a postharvest pulse). After petal expansion, lily flowers generally have low sensitivity to ethylene, but as developing buds they are usually highly sensitive to ethylene. By protecting young, sensitive buds, the anti-ethylene action molecule 1-MCP (1-methylcyclo-propene) can play an important role in maximizing lily display life, especially in situations of exogenous ethylene contamination. Chilling injury is not widely recognized in lilies. Leaf chlorosis that develops during or rapidly after cold storage (prior to marketing) is an example of chilling injury. Another example is the development of necrotic spots in unopened buds during postharvest cold storage of certain Oriental hybrid cultivars.