

Special Research Report #403: Postproduction

Storage, Transport, and Cultivar Evaluations of Flowering Potted Asiatic and Oriental Hybrid Lilies

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BACKGROUND

Asiatic and Oriental hybrid lilies, traditionally used as fresh cut flowers, have gained popularity as indoor flowering potted plants. The success of lily cultivars for indoor use depends on their ability to withstand periods of storage, transport, and low light conditions in retail and home environments. This research evaluated the response of potted Asiatic and Oriental hybrid lilies to storage, various simulated transport conditions, and consumer conditions to evaluate not only their performance as potted plants but to determine how to prolong flower life and quality. We evaluated 25 cultivars to identify the best selections for maximum performance.

MATERIALS AND METHODS

Bulbs were planted and forced in Raleigh, NC using the procedures described in the Holland Bulbs Forcers Guide

(De Hertogh, 1996). For storage studies, plants were stored at the marketable stage at 35°F (2°C) up to 9 days, then sleeved, boxed and shipped to the University of Florida at Gainesville on commercial shipping trucks providing temperatures of 37- 41°F (3 - 5°C). The shipping period was approximately 3-days.

For the simulated transport studies, 'Aristocrat', 'Horizon', and 'Polka' were sleeved, boxed, and transported within 24 hours at 40°F (5°C) to the University of Florida one week prior to flowering. Plants were immediately placed in a glass greenhouse until the first bud began to show color, the optimal marketable stage. To simulate transport, plants were sleeved, boxed and maintained at 35°F (2°C), 45°F (7°C) or 55°F (13°C) for 3, 6, or 9 days.

For cultivar evaluations, plants were shipped at marketable stage from Raleigh to Gainesville as outlined above. All plants were placed in postproduction rooms maintained at 70°F (21°C), 70 ftc. (12 hours/day), and 50±5% relative humidity.

RESULTS

Storage

The major problem with storing lilies is the manifestation of leaf disorders. The extent of leaf damage and the type of leaf disorder varies with cultivar and storage time. Disorders include leaf yellowing, leaf scorch, and leaf abscission.



Storage causes leaf yellowing.

Generally, these symptoms occurred quickly after storage. The extent of damage increased with storage time.



Leaf abscission occurred after 9 days of storage at 35°F.

Simulated Transport

Transport had little or no effect on floral bud opening of 'Aristocrat' and 'Horizon'. 'Polka' was the most sensitive cultivar to transport. Bud opening decreased 33% when transported at 55°F for 9 days, compared to 8% in the other cultivars (Figure 1).

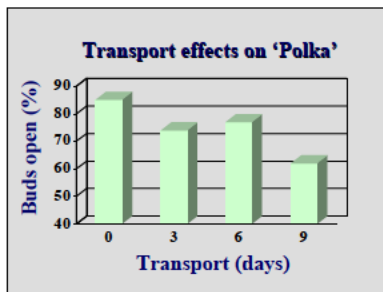


Figure 1. Transport effects on floral bud opening of 'Polka'.

Transporting lilies caused an 11% to 39% reduction in plant longevity. Longevity was significantly reduced when transported >3 days at 55°F and when transported for 9 days at 45°F or above. Longevity was reduced 7 days when transported at 55°F for 9 days (Figure 2).

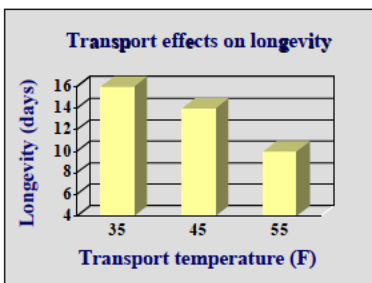


Figure 2. Effect of transport temperature on total plant longevity of lilies.

Cultivar Evaluations

Each cultivar was rated according to their performance in postproduction conditions. This rating took into account the presence and the severity of leaf and/or flower disorders. Cultivar performance ranged from high quality to unacceptable. The Asiatic cultivars lasted from 2 to 2 ½ weeks, while the Oriental cultivars lasted 3 to 4 weeks.

Best Performing Cultivars:

<u>Asiatics:</u>	
Admiration	Lemon Pixie
Buff Pixie	Lotus
Butter Pixie	New Wave
Dandy	Orbit
Disco	Petit Pink
	Sun Ray

Oriental:

Mona Lisa	Star Gazer
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Intermediate Performing Cultivars:

<u>Asiatics:</u>	
Calypso	Orange Pixie
Crimson Pixie	Reinesse
Orange Delight	

Oriental:

White Star Gazer

Unacceptable Performing Cultivars:

<u>Asiatics:</u>	
Aristocrat	Red Carpet
Pink Pixie	White Bird
Polka	

CONCLUSIONS

The variation in cultivar performance demonstrates the

need for forcers to carefully select cultivars. It is recommended that lilies be shipped when the first bud begins to show color. Potted lilies should not be cold stored, as this can promote leaf yellowing and leaf abscission. Transport temperatures should be maintained at 35°F for no more than 4 days and plants must be kept away from ethylene sources. Wholesalers and retailers should unsleeve plants immediately, water the medium with tepid water and maintain plants at 65°F to 70°F and 70-100 f.c. Consumers can expect plants to last 2-3 weeks under these conditions.

IMPACT TO INDUSTRY

The establishment of postproduction handling guidelines and cultivar selection enables growers, retailers, and consumers to improve the performance and extend longevity of potted lilies.

For further information:

Refer to: A.A. De Hertogh, 1996. Holland Bulbs Forcers Guide, 5th Edition, International Flower Bulb Centre, Hillegom, The Netherlands.

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