

Special Research Report #405: Postproduction

Maximizing the Postproduction Performance of Kalanchoe

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BACKGROUND

Kalanchoe has become a popular flowering potted plant with many new cultivars available in a wide assortment of color. Production practices, handling procedures, and transport, retail, and consumer conditions greatly influence the postproduction performance of flowering potted plants. This research identified production and postproduction factors that influenced the longevity and maximized quality of kalanchoe. The factors investigated include: fertilizer concentrations, fertilizer regime (duration), the proper stage of development for marketability, transport and consumer conditions, and genetic influence (cultivar). Twenty-eight cultivars were evaluated.

MATERIALS AND METHODS

'Kiebesy' and 'Michelle' were grown using standard cultural

practices. Plants were fertilized with 300 ppm N using Peters 20-10-20 until plants were marketable (25% of florets open), unless the fertilizer rate or duration was being tested.

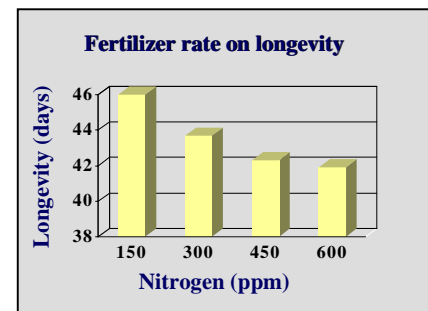
Fertilizer rates of 150, 300, 450, and 600 ppm were evaluated. To test fertilizer regime, fertilizer was either continued until flowering or terminated 4 weeks prior to flowering. To determine the proper stage of development for marketability, plants were selected when 1-2 flowers had opened, 25% opened and 75% opened. For simulated transport studies, plants were sleeved, boxed, and maintained at 40, 55 or 70°F for 3, 6, or 9 days. Consumer conditions of 65, 70, and 75°F at 50 or 100 ftc. were tested.

For general evaluations, including the cultivar trial, all plants were exposed to simulated transport conditions. Plants were sleeved, boxed and stored for 3 days at 50°F. Plants were then placed in postproduction rooms maintained at 70°F, 70 ftc. (12 hours/day), and 50±5% relative humidity.

RESULTS

Fertilizer Rates

Fertilizer rates did not effect days to flowering, plant height, plant width, or overall plant quality at flowering. Plants lasted 4-5 days longer when fertilized with 150 ppm N compared with 600 ppm N. Both cultivars had long lasting characteristics with 'Kiebesy' lasting an average of 48 days and 'Michelle' lasting 40 days. Using the lower rates of 150 to 300 ppm N are optimal for producing high quality, long lasting plants.



Fertilizer Duration

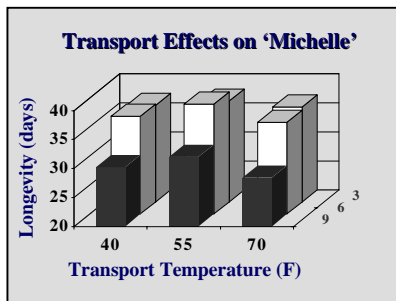
Fertilizer rates of 300 and 600 ppm N were either continued until flowering or terminated 4 weeks prior to flowering. Terminating fertilizer at these rates did not affect growth, quality or longevity. Therefore, terminating fertilizer 4 weeks prior to flowering is beneficial. This practice would reduce grower costs.

Stage of Marketability

Plants shipped with 1-3 florets open lasted 12 days longer than those shipped with 75% open and 6 days longer than plants shipped with 25% open. Buds continued to develop and fully open regardless of the stage of development at transport. Marketing when 10-25% of the florets are open will prolong longevity since buds take a longer time to develop and consequently provide a longer life for the consumer.

Simulated Transport

'Kiebessy' was tolerant to a wide range of transport conditions. Quality and longevity were not affected by transport conditions. 'Michelle' was sensitive to long-term transport. Longevity decreased when transported for 9 days at all temperatures. For Kalanchoe, a short transport period (<6 days) between 40-45°F is recommended, since lower temperatures will reduce sensitivity to ethylene.



Consumer Conditions

Plants lasted for long periods under all consumer conditions. However, longevity was greatest when maintained at 65°F and 100 ftc. On the

average, plants lasted 53, 41, and 35 days when maintained at 65, 70 and 75°F, respectively.



Longevity of 'Michelle' increased 18 days at 65°F.

Cultivar Evaluations

All cultivars had excellent quality, lasting from 39 to 66 days.

Cultivar	Longevity (days)
Lavender Colors	
Caroline	50
Cherry Singapore	48
Isabella	49
Timor	46
Orange Colors	
Boltz Orange	48
Klabat	55
Tropicana	54
Light Pink	
Light Jaqueline	46
Light Kiebessy	57
Pink Colors	
Chillean	55
Kercini	49
Lokon	45
Dark Pink	
Charme	60
Iztac	47
Jaqueline	50
Kiebessy	50
Red Colors	
Arjuno	47
Debbie	39
Juliana	46
Michelle	40

Cultivar	Longevity (days)
Rose Colors	
Calbuco	44
Miraval	53
Salmon/Peach	
Eternity	60
Nathalie	66
White Colors	
Simone	56
Yellow Colors	
Alexandra	43
Boltz Lt. Orange	43
Goldstrike	39

Longevity terminated when 75% of the florets senesced.

CONCLUSIONS

To increase longevity and quality of Kalanchoe, the recommendations listed below should be followed:

- * Select long-lasting cultivars
- * Fertilize at 150-300 ppm N
- * Terminate fertilizer - 4 weeks
- * Market with 10-25% florets open
- * Transport at 40F (<6 days)
- * Keep away from ethylene
- * Keep at 65-70°F at 100 ftc.

IMPACT TO INDUSTRY

Growers, wholesalers, and retailers can improve postproduction performance and extend longevity for consumers.

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