

Almquist, T 1984

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Bulb harvest techniques

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Introduction

A class research project in Winter Crops at the University of Minnesota was devised during the winter of 1981-82. This project involved forcing narcissus bulbs under two different light sources, harvesting the flower stems at three different stages of development and placing the cut flowers in two different holding solutions. In the winter of 1982-83 flower stems of narcissus were harvested at three different developmental stages and placed in four different solutions. The purpose of these projects was to determine the effects of these treatments on the vase life of cut narcissus.

Materials and Methods

1981-1982 Project: Flats of 'Golden Harvest' narcissus bulbs were planted and cooled according to the Rooting Room B schedule on October 24, 1981. They were removed from the cooling treatment on February 11, 1982. One flat was forced in the greenhouse under full sunlight at 63 degree Fahrenheit nights, the other flat being forced under only cool white fluorescent light at 70 degree Fahrenheit nights. The flower scapes were cut just above the bulb and at three different stages of development: pencil, gooseneck, and fully open flowers. The stems were placed in tap water or in tap water containing the recommended amount of Oasis Floral Preservative (two tablespoons per quart of water). The flower stems were then placed in a room with natural daylight from north windows (low light) and temperatures of 64-70 degrees Fahrenheit.

1982-1983 Project: Flats of 'Barret Browning' narcissus were planted and cooled according to the Rooting Room B schedule on October 6, 1982 and were removed on February 4, 1983. The bulbs were forced in the greenhouse under full sunlight at 63 degree Fahrenheit nights. The flower stems were harvested at the pencil stage, the gooseneck stage, and the fully open stage of development. They were then placed in four different solutions: tap water, deionized water, 25 percent by volume of 7-UpTM in tap water, and a 200 ppm 8-hydroxyquinilin citrate (8HQC) plus two percent sucrose solution in deionized water. These stems

Summary

From the above data, narcissus flower stems harvested at the fully open stage will have a longer vase life than stems harvested at the pencil or gooseneck stages. For shipping purposes though, this may not be possible. Stems harvested at the pencil or gooseneck stage, as well as those harvested when fully open, should be placed in a 200 ppm 8HQC with two percent sucrose solution as opposed to plain water. With proper harvest and post-harvest techniques, the forcer should be able to insure that the consumer has a product which lasts more than two to three days in the home. Differences between the two projects may be due to the two different cultivars used and the two different post-harvest environments.

The experiments described were a part of laboratory exercises in Hort. 5053 (Winter Crops) taught by Harold F. Wilkins in the Department of Horticultural Science and Landscape Architecture, University of Minnesota, St. Paul. The authors are undergraduate, adult special, and graduate research assistant, respectively.

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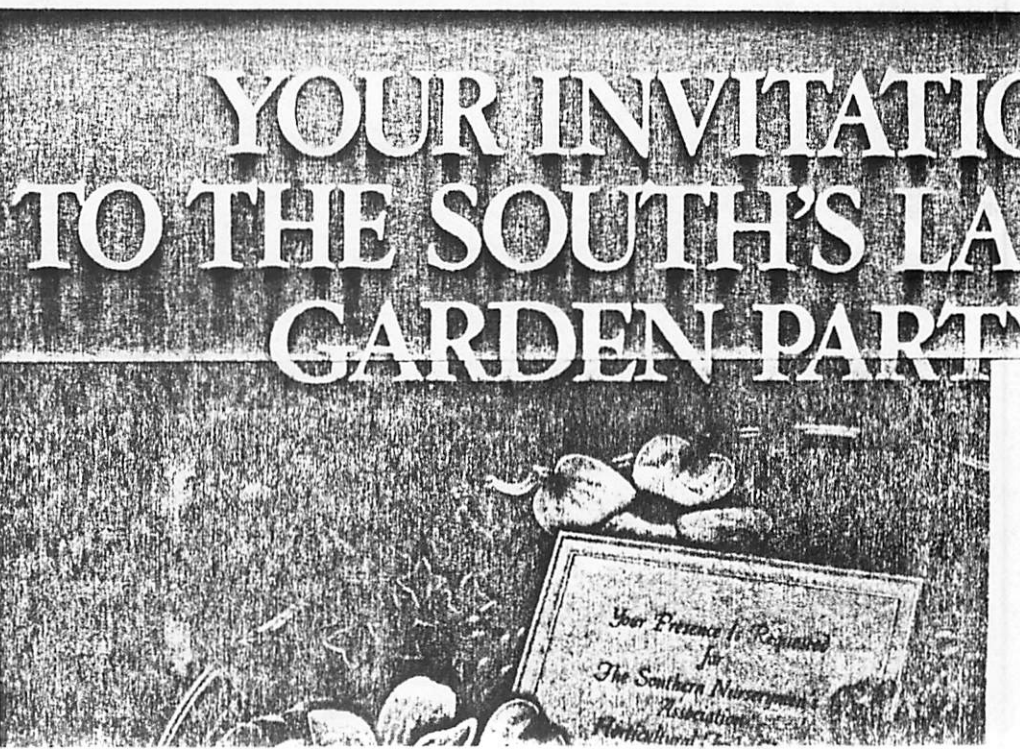
Table 1. 1981 - 1982 experiment in which 'Golden Harvest' narcissus forced under two environments, stems were cut at three stages placed in two solutions.

Where Forced	Stage Cut	Solution	Number of Days to Open Flower	Number of Days of Good Bloom	Scap Length (cm)
Greenhouse	Pencil	Tap Water	1.8	4.0	22.9
		Preservative	1.6	4.0	24.6
	Gooseneck	Tap Water	1.0	4.0	26.4
		Preservative	0.9	3.9	24.9
	Fully Open	Tap Water	---	5.6	28.4
		Preservative	---	5.6	29.5
Fluorescent Lights	Pencil	Tap Water	1.5	3.0	27.2
		Preservative	1.5	4.3	24.4
	Gooseneck	Tap Water	0.9	3.7	27.7
		Preservative	0.8	4.0	29.0
	Fully Open	Tap Water	---	4.4	30.5
		Preservative	---	4.2	30.0

Table 2. 1982 - 1983 experiment in which 'Barret Browning' narcissus stems were cut at three stages and placed in four solutions.

Stage Cut	Solution	Number of Days to Open Flower	Number of Days of Good Bloom	Scap Length (cm)
Pencil	Tap Water	2.0	3.0	20.3
	Deionized Water	2.0	3.0	21.3
	25% 7-Up Solution	2.0	3.2	20.2
	8HQC plus Sucrose	2.0	5.0	23.8
Gooseneck	Tap Water	1.0	3.2	27.1
	Deionized Water	1.0	3.0	26.9
	25% 7-Up Solution	1.0	2.2	27.4
	8HQC plus Sucrose	1.0	5.0	23.7
Fully Open	Tap Water	---	5.8	31.0
	Deionized Water	---	5.6	30.0
	25% 7-Up Solution	---	5.8	29.6
	8HQC plus Sucrose	---	6.0	33.2

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light at 70 degree Fahrenheit nights. The flower scapes were cut just above the bulb and at three different stages of development: pencil, gooseneck, and fully open flowers. The stems were placed in tap water or in tap water containing the recommended amount of Oasis Floral Preservative (two tablespoons per quart of water). The flower stems were then placed in a room with natural daylight from north windows (low light) and temperatures of 64-70 degrees Fahrenheit.

1982-1983 Project: Flats of 'Barret Browning' narcissus were planted and cooled according to the *Rooting Room B* schedule on October 6, 1982 and were removed on February 4, 1983. The bulbs were forced in the greenhouse under full sunlight at 63 degree Fahrenheit nights. The flower stems were harvested at the pencil stage, the gooseneck stage, and the fully open stage of development. They were then placed in four different solutions: tap water, deionized water, 25 percent by volume of 7-Up™ in tap water, and a 200 ppm 8-hydroxyquinolin citrate (8HQC) plus two percent sucrose solution in deionized water. These stems were placed under continuous cool white fluorescent lighting and a constant temperature of 70 degree Fahrenheit. Measurements from both projects were taken on length of flower scape, length of time required to open flowers harvested in the pencil and gooseneck stages, and the number of days of good bloom. The end of bloom period was taken to be the day on which petals began to turn translucent or brown. Five flower stems were used in each treatment in both experiments.

Results

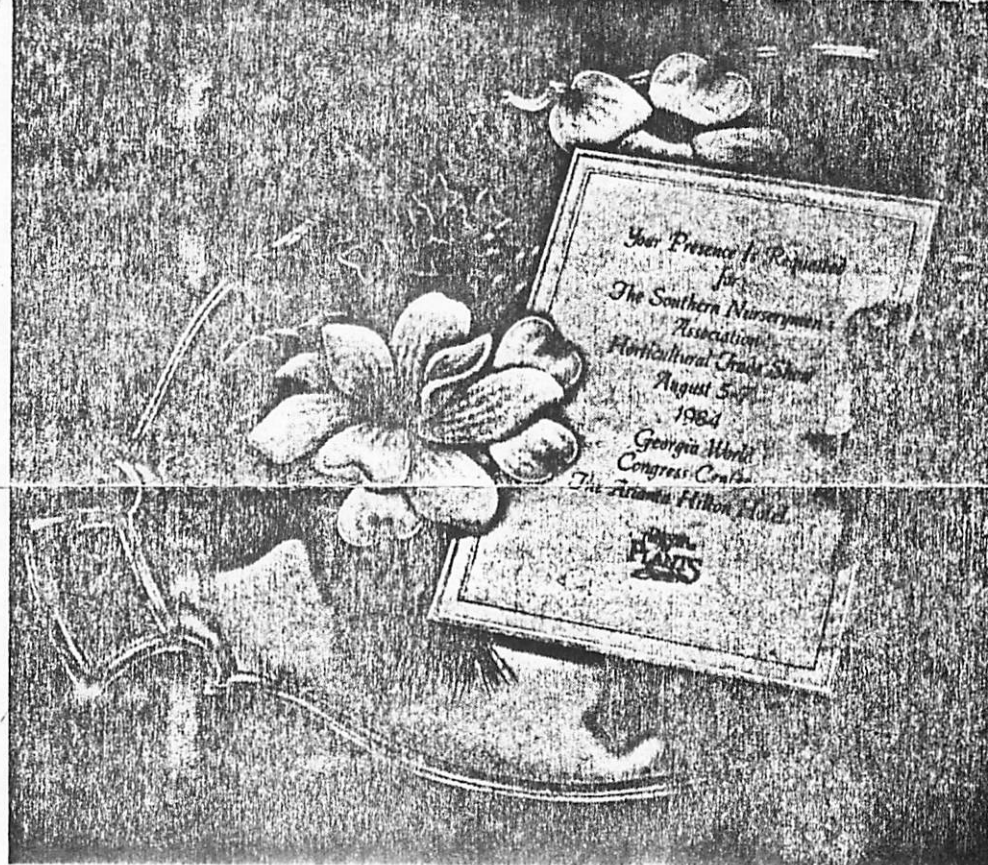
1981-1982 Project: Plants forced in the greenhouse generally resulted in shorter scapes, the flowers had a longer vase life, and the time from harvest to open flower was greater (for stems that were harvested in the pencil and gooseneck stages) than did plants forced under artificial light (Table 1). Flower stems harvested when fully open had longer scapes and a longer vase life than did flower stems harvested at the pencil and gooseneck stages. The differences between tap water and preservative solution were minimal.

1982-1983 Project: Similarly, flower stems harvested when fully open resulted in the longest scapes and the longest vase life (Table 2). Flower stems harvested at the gooseneck stage opened more quickly, but lasted no longer than did flower stems harvested at the pencil stage. Flower stems placed in the 8HQC solution had a longer vase life than did any of the other treatments, and stems cut in the pencil or gooseneck stage had flowers which lasted longer than any other solution.

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Sucrose 6.0 33.2
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