

A large, detailed illustration of various flowers and foliage, rendered in a light blue, stippled or halftone style. The flowers include daisy-like blooms, tulips, and other varieties, with their stems and leaves visible. The background is a fine grid of dots.

1998
***Evaluation of
Postharvest Life
of Selected
Fresh-Cut
Flowers***

Report of Progress 840

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

1998 Evaluation of Postharvest Life of Selected Fresh-Cut Flowers

Karen L.B. Gast, Ph.D.

*Department of Horticulture, Forestry and Recreation Resources
Kansas State University*

As consumers acquire a taste for new and different flowers, growers, vendors, and florists need postharvest information to determine the expected vase life of these flowers and the best way to extend it. Postharvest evaluations were conducted on cosmos, sunflowers, snow-on-the-mountain, *Helonium*, hardy amaryllis, and beebalm.

Procedures

The objective of postharvest evaluations for cosmos, snow-on-the- mountain, and sunflowers was to determine whether floral preservatives improved the vase life of the flowers. Four cultivars of cosmos and five cultivars of sunflowers were evaluated. These flowers were placed in water or floral preservative after having their stems cut under water by 2.5 cm. Stem ends of snow-on-the-mountain were seared with an open flame to seal the latex ducts. The latex extruded from these can plug the xylem of the stems, cause wilting, and shorten the vase life. Two varieties of *Helonium* were evaluated for vase life in water. Holding containers were 0.9 liter glass jars filled with approximately 600 ml of either water or floral preservative.

The objective of the postharvest evaluations for hardy amaryllis and beebalm included a comparison of the effect of silver thiosulphate. The treatments were STS pulsing with and without floral preservative in a two by two factorial design. In these evaluations, the flower stems were either treated (pulsed) with STS for 30 minutes or not and then held either in water or floral preservative, giving four treatments of 1) water with STS, 2) water without STS, 3) floral preservative with STS, and 4) floral preservative without STS.

Pulsing is a term used in the floral industry to describe fresh-flower handling procedures where the fresh-cut flowers are placed in a special solution for a given period of time, usually 20 minutes to a couple of hours. Holding containers were 0.9 liter glass jars filled with approximately 600 ml of either water or floral preservative. The fresh weights of these flowers were measured daily. The weight status is an indicator of the health of the flower. If the flower is continuing to gain weight, it usually has more potential vase life. When a flower stops gaining weight, it usually will die soon thereafter.

Cosmos

Cosmos are standard garden flowers. They can be focal flowers or used as a spray with the fine airy foliage. No differences occurred in vase life whether water or floral preservative was used (Table 1). Pied Piper Red lasted longer than Psyche and Daydream, although the vase life of more than 6 days for all is acceptable for any cut flower.

Table 1. Postharvest life of cosmos cultivars held in water or floral preservative.

Cultivar	Postharvest Life (days)*	
	Water	Floral Preservative
Psyche	7.3 a	7.9 a
Purity	7.7 a	N.A.
Pied Piper Red	9.4 a	9.7 a
Daydream	7.7 a	6.4 a

*Means followed by different letters are significantly different at the 5% level of probability.

Hardy Amaryllis

No differences occurred among treatments for 1) the day all flowers died, 2) the day the first flower died, 3) the first day all flowers were open, 4) the number of days all flowers were open, 5) the last day all flowers were open, 6) the day of the greatest fresh weight, and 7) the percent weight gain to greatest fresh weight. Flowers held in water had less percent loss of fresh weight than those held in floral preservative. Flowers treated with STS and held in floral preservative were losing weight when the first flower died as compared to flowers in the other treatments, which were still gaining weight.

Table 2. Postharvest life of hardy amaryllis with or without silver thiosulphate (STS) treatment and held in water or floral preservative (FP).

Indicator	H ₂ O	FP	STS-H ₂ O	STS-FP
Day all flowers dead	10.9	11.0	12.1	11.3 ^{NS z}
Day 1 st flowers dead	6.7	7.0	7.4	7.1 ^{NS}
Day all flowers open	3.8	4.9	5.0	5.0 ^{NS}
Number of days all flowers open	2.9	2.1	2.8	2.1 ^{NS}
Last day all flowers open	5.7	6.0	6.4	6.1 ^{NS}
Day greatest fresh weight	4.0	3.7	4.6	4.4 ^{NS}
% Weight gain to greatest fresh weight	21.4	18.7	25.3	19.5 ^{NS}
% Weight gain on last day	-13.3	-36.0	-9.6	-35.7 ^{**z}
% Weight gain when 1 st flower dead	15.6	10.5	15.7	-1.4 ^{***z}

^z **, ***, and ^{NS} indicate differences within rows of means at the 1.0 % and 0.1% levels of probability and not significantly different.

Sunflowers

New and different cultivars of sunflowers are introduced each year. Some are more suited for the garden, whereas others can be used for cut flowers. No differences occurred in the vase lives of the different sunflower cultivars. ‘Moonshadow’, ‘Lemon Eclair’, and ‘Sundrops’ are all spray type sunflowers. Any of these should provide acceptable vase life for the grower and homeowner.

Table 3. Postharvest life of sunflower cultivars held in water.

Cultivars	Postharvest Life (days)*
Primrose	6.5 a
Del Sol	8.1 a
Moonshadow	7.9 a
Lemon Eclair	7.0 a
Sundrops	7.6 a

*Means followed by different letters are significantly different at the 5% level of probability.

Snow-on-the-Mountain

Snow-on-the-mountain often is considered a “ditchweed”, but its spray form and variegated foliage and flowers provide an attractive addition to bouquets. Snow-on-the-mountain flowers benefitted from the use of floral preservatives, lasting 4 days longer than those held in water.

Table 4. Postharvest life of snow-on-the-mountain held in water or floral preservative.

Treatment	Postharvest Life (days)*
Floral preservative	10.7 a
Water	6.3 b

*Means followed by different letters are significantly different at the 5% level of probability.

Helenium

Flowers that are actually inflorescences of many florets can have limited acceptability as cut flowers because too many of the individual florets die before the others open. With *Helenium*, over half the florets for both varieties were still alive for at least 80% of the flowers’ total vase life. This makes it a good cut-flower candidate.

Table 5. Total vase life and half life of two *Helenium* varieties held in water.

Indicator	Yellow Variety	Bicolored Variety
Day all flowers dead (day)	16.0	13.2
Day half flowers dead (day)	13.4	10.7

Beebalm ‘Lambada’

The inflorescences of beebalm make it an interesting cut flower. The flowers occur in whorls and are surrounded by colored bracts. These bracts retain their color after the individual flowers drop, preserving the attractive appearance of the inflorescence. Over a 10-day course of observation, flowers in all treatments appeared to be acceptable. The flowers in floral preservative held their color better, but the foliage had brown spots. A similar problem was seen in other species of the same family, such as oregano.

Initially, fresh weights differed among the flowers assigned to the different treatments (Table 5). The flowers pulsed with STS and to be held in water were heavier than flowers in the other treatments. However, when the flowers reached their highest fresh weights, no differences occurred among treatments. The water+STS flowers reached their greatest fresh weight early and had a lesser gain in fresh weight. Flowers held only in water had the greatest weight gain. Apparently, STS was of no benefit for beebalm, and floral preservatives caused discoloration in the leaves. Water is probably the best for holding beebalm.

Table 5. Postharvest fresh weights for beebalm.*

Treatment	Initial Fresh Wt.	Highest Fresh Wt.	Day Highest Fresh Wt.	Percent Weight Gain
Floral preservative	12.03c	14.07a	5.53a	15.41b
Floral preservative+STS	12.84b	14.99a	5.47a	15.95ab
Water	11.61c	14.29a	4.13b	20.19a
Water+STS	14.87a	16.08a	3.00c	8.16c

*Means followed by different letters are significantly different at the 5% level of probability.

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