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*Production and Postharvest Evaluations of*

***Fresh-Cut  
Peonies***



*Kansas State University Agricultural Experiment Station and Cooperative Extension Service*

## 1996 PRODUCTION AND POSTHARVEST EVALUATIONS OF FRESH-CUT PEONIES

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In the fall of 1992, a cultivar trial of peony plants (*Paeonia lactiflora*) was established at the Kansas State University Horticulture Research Center, Manhattan, KS, to determine which cultivars would produce good fresh-cut flowers. Since then, new cultivars have been added, so the planting now includes 72 different cultivars (Table 1). The cultivar trial plots include five plants set 0.91 m apart within the beds. Beds are 0.91 m-wide with 1.22 m-wide grass aisles between them. In addition to the yield and harvest date data, flowers from these trials were used for postharvest evaluations studies.

In 1993, a commercial-size trial was established of the cultivar 'Shawnee Chief', a red double. The initial planting included three beds 0.91 m wide with 1.22 m-wide grass aisles between them. Plants were set in double rows in the beds with 0.61 m between the double rows and 0.91 m between plants in the rows. Beds were 32 m long with a total of 70 plants per bed. In the fall of 1995, seven more beds were established in the same manner. Four of these beds contain 'Shawnee Chief', and three of them contain 'Snow Mountain', a white bomb-type. Flowers from the initial beds of 'Shawnee Chief' were used for prestorage treatment studies.

**Table 1. Peony cultivars included in planting at the Horticulture Research Center -- Manhattan, KS, 1996.**

<i>Cultivar</i>	<i>Description</i>
<b>RED</b>	
<i>Apache</i>	Single, dark red, early mid-season
<i>Cherry Bomb</i>	Bomb, deep red, early mid-season
<i>Comanche</i>	Japanese, dark rose wine, early mid-season
<i>David Harum</i>	Double, light crimson, mid-season
<i>Felix Crouse</i>	Double, brilliant ruby red, mid-season
<i>Felix Supreme</i>	Double, rich ruby red, mid-season
<i>Grover Cleveland</i>	Double, deep crimson, late season
<i>Harry Richardson</i>	Double, rich carmine red, very late season
<i>Henry Bocktoce</i>	Double, true red, early mid-season
<i>Judy Becker</i>	Double, rich dark red, late mid-season
<i>Kansas</i>	Double, bright red, early season
<i>Karl Rosenfield</i>	Double, brilliant crimson, mid-season
<i>Lora Dexheimer</i>	Double, bright crimson, mid-season
<i>Louis van Houtte</i>	Double, dark red, late mid-season
<i>Monsieur Martin Cahuzac</i>	Double, very dark red, early mid-season
<i>Montezuma</i>	Single, crimson, early season
<i>Peter Brand</i>	Double, very dark red, early mid-season
<i>Philippe Rivoire</i>	Bomb, very dark crimson, mid-season

**Table 1. Peony cultivars included in planting at the Horticulture Research Center -- Manhattan, KS, 1996. (cont'd)**

<i>Cultivar</i>	<i>Description</i>
<i>Raspberry Ice</i>	Bomb, raspberry red/silver, early season
<i>Red Charm</i>	Bomb, double, dark red, early mid-season
<i>Richard Carvel</i>	Double, bright crimson, early season
<i>Shawnee Chief</i>	Double, dark red, mid-season
<b>WHITE</b>	
<i>Bridal Icing</i>	Bomb, pure white, mid-season
<i>Bridal Shower</i>	Bomb, pure white, mid-season
<i>Capital Dome</i>	Bomb, pure white, mid-season
<i>Cloud Cap</i>	Double, pure white, mid-season
<i>DH1460</i>	Double, pure white, mid-season
<i>Dr. F.G. Brethour</i>	Double, creamy center, late-season
<i>Duchess de Nemours</i>	Double, light yellow center, early season
<i>Elsa Sass</i>	Double, pinkish cast, late season
<i>Festiva Supreme</i>	Double, crimson flecks, mid-season
<i>Festiva Maxima</i>	Double, crimson flecks, early season
<i>Henry Sass</i>	Double, pure white, late mid-season
<i>Leading Lady</i>	Double, pure white, late season
<i>Lullaby</i>	Double, blush to white, late season
<i>Madame de Vernville</i>	Bomb, blush center, early season
<i>Snow Mountain</i>	Bomb, pure white, late season
<i>Spellbinder</i>	Single, pure white, mid-season
<i>69A</i>	Bomb, ivory white, early season
<b>PINK</b>	
<i>Armistice</i>	Double, rose pink, late mid-season
<i>Baroness Schroeder</i>	Double, very light pink/blush, late mid-season
<i>Better Times</i>	Double, deep rose pink, late mid-season
<i>Doris Cooper</i>	Double, light pink, late season
<i>Edulis Superba</i>	Double, old rose pink, early season
<i>Grace Batson</i>	Double, medium pink, late mid-season
<i>Hermoine</i>	Double, light pink, late mid-season
<i>James Pillow</i>	Double, light pink, late season
<i>Jayhawker</i>	Bomb, soft pink, early season
<i>Lady Kate</i>	Double, sparkling pink, very late season
<i>Mister Ed</i>	Bomb, soft pink, early season
<i>Monsieur Jules Elie</i>	Bomb, medium pink, early mid-season
<i>Mrs. Franklin D. Roosevelt</i>	Double, soft rose pink, mid-season
<i>Ozark Beauty</i>	Double, radiant pink, late season
<i>Raspberry Sundae</i>	Double, light creamy pink, mid-season
<i>Reine Hortense</i>	Double, light pink, crimson flecks, mid-season

**Table 1. Peony cultivars included in planting at the Horticulture Research Center -- Manhattan, KS, 1996. (cont'd)**

<i>Cultivar</i>	<i>Description</i>
<i>Romance</i>	Japanese, dark pink with yellow center, mid-season
<i>Rose Pearl</i>	Double, medium pink, mid-late season
<i>Sarah Bernhardt</i>	Double, apple blossom pink, late season
<i>Solange</i>	Double, buff with salmon pink center, late season
<i>Souvenir de Louis Bigot</i>	Double, rose pink/shell pink, mid-season
<i>Therese</i>	Double, old rose pink, mid season
<i>Walter Faxon</i>	Double, shell pink, mid-season
<i>Westerner</i>	Japanese, soft pink, mid-season
<i>Wrinkles and Krinkles</i>	Double, deep rose pink, late mid-season
<b>CORAL</b>	
<i>Coral Fay</i>	Single, hot rose coral, early season
<i>Coral'n'Gold</i>	Single, orange coral, early season
<i>Lovely Rose</i>	Single, coral pink, very early season
<i>Mrs. Livingston Farand</i>	Double, coral pink, late season
<i>Orange Lace</i>	Japanese, pink with orange center, mid-season
<b>BICOLOR</b>	
<i>Candy Heart</i>	Double, white with red stripes, mid-late season
<i>Lois Kelsey</i>	Semi-double, white with red stripes, mid-season
<i>Lord Cavin</i>	Double, creamy pink with red stripes, mid-season

### Yield and Harvest Period Evaluation

Full production usually does not occur until the fifth year. Only a minimal harvest can be taken in the third year. Yield data are given only for those cultivars in their third year or more (Table 2). Harvest periods are included for all cultivars that bloomed in 1996.

Single types bloomed much earlier than the doubles and bombs. Early cultivars bloomed in time for Memorial Day, the major market for peony flowers in Kansas. Because no late freeze occurred cold-temperature damage to the flower buds was minor. .

**Table 2. Peony harvest period and yield at the Horticulture Research Center -- Manhattan, KS, 1996.**

<i>Color</i>	<i>Cultivars</i>	<i>Year Planted</i>	<i>Harvest Period (dates)</i>	<i>Yield* (flowers per plant)</i>
<b>RED</b>	Apache	1995	19 May-24 May	----
	Cherry Bomb	1993	25 May-31May	2.2
	Comanche	1995	23 May-26 May	----
	David Harum	1992	21 May-26 May	7.8
	Felix Crouse	1992	21 May-31 May	11.6
	Harry Richardson	1993	25 May -1 June	2
	Henry Bocktoce	1994	22 May-24 May	-----

**Table 2. Peony harvest period and yield at the Horticulture Research Center -- Manhattan, KS, 1996. (cont'd)**

<i>Color</i>	<i>Cultivars</i>	<i>Year Planted</i>	<i>Harvest Period (dates)</i>	<i>Yield* (flowers per plant)</i>
<b>RED</b>	Judy Becker	1992	24 May-25 May	2.2
	Kansas	1992	18 May-3 June	7
	Karl Rosenfield	1992	18 May-30 May	9.8
	Lora Dexheimer	1992	21 May-29 May	8.2
	Lord Cavin	1994	25 May-31 May	----
	Louis van Houtte	1993	24 May-3 June	3.4
	Montezuma	1994	18 May	----
	Mon. Martin Cahuzac	1992	22 May-3 June	4.8
	Peter Brand	1994	18 May	----
	Philippe Rivoire	1992	25 May-3 June	7.8
	Raspberry Ice	1994	18 May-25 May	----
	Red Charm	1993	21 May-27 May	2
	Richard Carvel	1992	20 May-31 May	15.2
	Shawnee Chief	1992	23 May-3 June	11.4
<b>PINK</b>	Armistice	1993	27 May-3 June	1.8
	Baroness Schroeder	1992	26 May-4 June	1.8
	Better Times	1993	24 May-1 June	4.4
	Coral Fay	1994	9 May-15 May	----
	Coral n' Gold	1994	16 May-18 May	----
	Doris Cooper/Lady Kate	1992	31 May-4 June	2.6
	Edulis Superba	1992	18 May-3 June	16.2
	Grace Batson	1992	25 May-3 June	3.4
	Hermoine	1993	28 May-3 June	2.2
	James Pillow	1992	24 May-3 June	7
	Jayhawker	1993	23 May-3 June	2.2
	Lovely Rose	1995	20 May	----
	Mister Ed.	1992	18 May-25 May	7.6
	Monsieur Jules Elie	1992	18 May-3 June	7.4
	Mrs. F.D. Roosevelt	1992	24 May-31 May	4.2
	Orange Lace	1994	10 May-16 May	----
	Ozark Beauty	1993	24 May-3 June	5.2
	Raspberry Sundae	1992	21 May-3 June	3
	Reine Hortense	1992	24 May-31 May	5.8
	Romance	1995	17 May-22 May	----
	Sarah Bernhardt	1992	26 May-31 May	3.8
	Souvenir de Louis Bigot	1992	23 May-25 May	1.2
	Solange	1995	28 May	----
Therese	1992	18 May-1 June	9.6	

**Table 2. 1996 Peony harvest period and the yield at Horticulture Research Center -- Manhattan, KS, 1996. (cont'd)**

<i>Color</i>	<i>Cultivars</i>	<i>Year Planted</i>	<i>Harvest Period (dates)</i>	<i>Yield* (flowers per plant)</i>
	Walter Faxon	1992	22 May-1 June	9.6
	Westerner	1993	24 May-3 June	----
	Wrinkles and Krinkles	1993	25 May-1 June	3.2
<b>WHITE</b>	69A	1992	18 May-3 June	10.4
	DH 1460	1995	24 May	----
	Bridal Icing	1994	23 May-31 May	----
	Candy Heart	1994	25 May-3 June	----
	Capitol Dome	1993	21 May-24 May	----
	Dr. F.G. Brethour	1992	22 May-4 June	6.2
	Duchess de Nemours	1994	25 May-31 May	----
	Elsa Sass	1993	29 May-3 June	0.6
	Festiva Supreme	1992	23 May-31 May	4.8
	Festiva Maxima	1992	17 May-25 May	9.6
	Henry Sass	1992	18 May-4 June	6.8
	Leading Lady	1993	31 May-1 June	0.4
	Lois Kelsey	1992	17 May-30 May	5
	Mme. de Vernville	1994	24 May-3 June	----
	Snow Mountain	1995	18 May-29 May	----
	Spellbinder	1995	23 May-24 May	----

\* No yield data are listed for cultivars less than 3 years old.

### Harvest and Handling for Postharvest Evaluations

Peony flowers were harvested at least once a day and sometimes twice a day to find them at the colored, soft bud stage. When temperatures were above 80° F, harvesting flowers at this minimum stage of maturity was often difficult, because flower opening is temperature dependent. Stems were cut at least 35 cm long, bunched with rubber bands by cultivar, and labeled. Flowers then were transported to the laboratory for sorting and grading for the various postharvest studies. These studies included initial vase life, vase life after various periods of cold storage, and pretreatment before long-term storage.

For all postharvest evaluations, leaves on the bottom 2/3 of the stem were removed. Stems were recut underwater to remove approximately 2.5 cm and maintain at least a 30 cm stem length. Five stems then were placed in labeled 0.8-liter glass jars with 0.6 liters of municipal tap water. Water was added as needed to maintain the initial level. Each cultivar evaluation, unless otherwise noted, had three replications. Vase life was considered at an end when the petals dropped or were wilted. Flowers were held under simulated consumer conditions, 20° C and light levels of 15.1  $\mu\text{mol}/\text{sec}/\text{m}^2$ .

For initial vase life studies, flowers were set up for evaluation within 24 hours of harvest. If flowers were not handled immediately, they were placed in cold storage at 4° C for no more than 24 hours.

For long-term storage, the sorting and grading process included bunching the flowers by fives with rubber bands; labeling the bunches with cultivar name and date; and placing the bunches in 2-gallon, plastic, self-

sealing bags. The bagged flowers then were placed in cold storage at  $2^{\circ}\pm 1^{\circ}$  C. Bunches were removed from storage at prescribed times.

### **Prestorage Treatment Evaluation**

The objective was to determine whether the prestorage treatments would extend the vase life and storage life of peony flowers. ‘Shawnee Chief’ flowers from the commercial block were given four prestorage treatments and then held in cold storage from 2 to 14 weeks with samples removed every 2 weeks, giving total of eight storage treatments. The prestorage treatments were holding the flowers in 1) water, 2) floral preservative, or 3) sucrose for 2 hours prior to storage and 4) a control of no holding solution. After the application of the prestorage treatment, the flowers were placed in 2 gallon, plastic, self-sealing bags and stored at  $2^{\circ}\pm 1^{\circ}$  C.

### **Postharvest Life Evaluations of Fresh-Cut Peony Flowers**

Tables 3, 4, and 5 report the results of the evaluations immediately after harvest. The cultivars listed in Tables 3 and 4 had enough flowers so statistical analysis could be performed to determine which have longer vase life. The cultivars listed in Table 5 had less flowers than required for statistical analysis. They are included to give the grower an idea for their possible vase life.

Although not reported here, fresh weights were taken daily for each flower during the vase life evaluation. This extra handling may be the reason that a majority of the cultivars evaluated this year had vase lives 1 to 3 days shorter than those reported for 1995. Open flower diameter was measured. Flower size is a factor in determining what cultivars to select for production. The specific use for the flowers will determine which size is desirable. Access to this information will help growers during the cultivar selection process.

White Cultivars -- The ranking of the cultivars was similar to that for the previous season, 1995, except ‘Lois Kelsey’ performed better this year. Two new white cultivars included this year, ‘Snow Mountain’ and ‘69A’, were among the top cultivars. Distinct differences in flower size occurred among the cultivars. This gives the grower a choice of good performing cultivars of varying flower size.

Red Cultivars -- The ranking of the cultivars was similar to that for the previous season, 1995. A new cultivar ‘Louis van Houtte’ performed poorly compared to the others. Flowers with good vase life had a wide range of sizes.

Pink Cultivars -- ‘James Pillow’ and ‘Mister Ed’ again topped the rankings for pink peonies. ‘Sarah Bernhardt’, a standard in the marketplace, did better this year than last year and ranked third. As with the other colors, a wide range of diameters is available in flowers with good vase life.

**Table 3. Vase life of fresh-cut peony flowers immediately after harvest, 1996.**

<i>Cultivar</i>	<i>Vase Life*(days)</i>
<b>WHITE</b>	
Snow Mountain	6.5 a
Henry Sass	6.4 a
Lois Kelsey	6.1 a
Festiva Supreme	6.1 a
69A	6.0 ab
Dr. F.G. Brethour	5.9 ab
Festiva Maxima	5.1 b

**Table 3. Vase life of fresh-cut peony flowers immediately after harvest, 1996. (cont'd)**

<i>Cultivar</i>	<i>Vase Life*(days)</i>
<b>RED</b>	
Philippe Rivoire	7.7 a
David Harum	6.9 ab
Felix Crouse	6.7 abc
Felix Supreme	6.6 abc
Karl Rosenfield	6.1 bcd
Richard Carvel	5.8 bcde
Kansas	5.5 cde
Shawnee Chief	5.1 def
Lora Dexheimer	4.8 ef
Louis van Houtte	4.1 fg
Monsieur Martin Cahuzac	3.5 g
<b>PINK</b>	
James Pillow	6.9 a
Mister Ed	6.4 ab
Sarah Bernhardt	6.3 abc
Raspberry Sundae	6.0 abcd
Better Times	5.9 abcd
Ozark Beauty	5.9 abcd
Monsieur Jules Elie	5.8 bcd
Mrs. F. D. Roosevelt	5.7 bcd
Edulis Superba	5.3 cd
Walter Faxon	5.2 d
Wrinkles and Krinkles	4.2 e
Therese	4.0 e
Orange Lace	3.3 e

\*Means of three replications of five flowers each. Means, by flower color, followed by different letters are significantly different at the 5.0% level of probability.

**Table 4. Diameter of open fresh-cut peony flowers immediately after harvest, 1996.**

<i>Cultivar</i>	<i>Flower Diameter* (in.)</i>
<b>WHITE</b>	
Henry Sass	6.1 a
Dr. F. G. Brethour	5.7 a
Festiva Maxima	5.7 a
Felix Supreme	5.6 a
Snow Mountain	4.7 b
69A	4.5 b
Lois Kelsey	4.5 b



**Table 4. Diameter of open fresh-cut peony flowers immediately after harvest, 1996. (cont'd)**

<i>Cultivar</i>	<i>Flower Diameter* (in.)</i>
<b>RED</b>	
Felix Supreme	5.8 a
David Harum	5.2 b
Felix Crouse	5.1 b
Kansas	5.0 bc
Monsieur Martin Cahuzac	4.9 bc
Richard Carvel	4.9 bc
Shawnee Chief	4.8 bc
Lora Dexheimer	4.5 c
Louis van Houtte	3.9 d
Philippe Rivoire	3.9 d
Karl Rosenfield	3.7 d
<b>PINK</b>	
Mister Ed	6.3 a
James Pillow	6.1 ab
Mrs. F.D. Roosevelt	5.5 bc
Walter Faxon	5.5 bc
Raspberry Sundae	5.5 cd
Reine Hortense	5.3 cd
Better Times	5.2 cd
Therese	5.2 cd
Monsieur Jules Elie	5.0 cd
Wrinkles and Krinkles	4.9 cde
Edulis Superba	4.7 def
Orange Lace	4.3 ef
Ozark Beauty	4.3 ef
Sarah Bernhardt	4.0 f

\*Means of three replications of five flowers each. Means, by flower color, followed by different letters are significantly different at the 5.0% level of probability.

**Table 5. Vase life immediately after harvest of fresh-cut peony flowers of selected cultivars. Plants did not yield enough flowers for statistical analysis, 1996.**

<i>Cultivar</i>	<i>Vase Life (days)</i>
<b>RED</b>	
Apache	4.6 (5)*
Cherry Bomb	6.3 (4)
Comanche	5.6 (7)
Grover Cleveland	6.8 (4)
Henry Bocktoce	6.0 (2)

**Table 5. Vase life immediately after harvest of fresh-cut peony flowers of selected cultivars. Plants did not yield enough flowers for statistical analysis, 1996. (cont'd)**

<i>Cultivar</i>	<i>Vase Life (days)</i>
Harry Richardson	5.0 (3)
Judy Becker	5.9 (7)
Lord Cavin	7.0 (4)
Peter Brand	6.0 (3)
Raspberry Ice	6.6 (5)
Red Charm	5.1 (10)
<b>PINK/CORAL</b>	
Armistice	5.5 (2)
Coral Fay	3.4 (5)
Coral'n'Gold	3.4 (11)
Doris Cooper/Lady Kate	5.4 (10)
Grace Batson	5.7 (11)
Hermoine	5.8 (9)
Jayhawker	6.2 (9)
Lovely Rose	6.0 (2)
Romance	5.0 (2)
Rose Pearl	6.3 (4)
Souvenir de Louis Bigot	6.0 (6)
Solange	5.0 (1)
Westerner	5.3 (6)
<b>WHITE</b>	
Bridal Icing	4.5 (4)
Bridal Shower	6.0 (4)
Capitol Dome	6.3 (3)
Candy Heart	6.0 (1)
Duchess de Nemours	4.0 (2)
Elsa Sass	6.0 (1)
Madame de Vernville	5.5 (2)
Spellbinder	5.7 (3)

\*Vase life is the mean of the number of flowers in parentheses.

### **Extended Storage Evaluations (Tables 6, 7, 8, 9, and 10)**

White Cultivars -- '69A' and 'Festiva Maxima' sustained the same vase life after 1 week of cold storage whereas 'Henry Sass' and 'Festiva Supreme' did not (Table 3 and 6). Five weeks appears to be the maximum storage period for 'Festiva Maxima'. Extended storage did not seem to affect the flower diameter of this cultivar until after 6 weeks storage.

Red Cultivars -- The 1 week evaluation rankings were similar to those immediately after harvest (Table 3 and 6). However, 'Philippe Rivoire' did not sustain that high level of performance after 2 weeks of storage (Table 7).

Pink Cultivars -- ‘James Pillow’ continued to rank first after 1 week of storage (Table 6). ‘Mister Ed’ declined in performance after storage. Four to five weeks appears to be the maximum storage time for ‘Edulis Superba’, after five week the flowers did not open as much as before (Table 8).

**Table 6. Vase life and diameter of fresh-cut peony flowers stored for 1 week at 2°C, 1996.**

<i>Cultivar</i>	<i>Vase Life*(days)</i>	<i>Flower Diameter* (in.)</i>
<b>PINK</b>		
James Pillow	5.7 a	5.9 a
Edulis Superba	5.4 ab	4.7 c
Therese	5.0 bc	5.4 abc
Raspberry Sundae	4.9 bc	5.7 ab
Mister Ed	4.8 bc	5.9 a
Walter Faxon	4.5 c	5.0 bc
<b>RED</b>		
Philippe Rivoire	6.0 a	4.5 c
Felix Crouse	5.8 ab	5.1 b
Richard Carvel	5.4 bc	4.3 c
Felix Supreme	5.3 c	5.9 a
<b>WHITE</b>		
69A	5.8 a	5.2 b
Henry Sass	5.4 a	6.0 a
Festiva Maxima	4.8 b	5.9 a
Festiva Supreme	4.5 b	5.8 a

\*Means of three replications of five flowers each. Means, by flower color, followed by different letters are significantly different at the 5.0% level of probability.

**Table 7. Vase life and diameter of fresh-cut peony flowers stored for 2 week at 2°C, 1996.**

<i>Cultivar</i>	<i>Vase Life*(days)</i>	<i>Flower Diameter* (in.)</i>
<b>PINK</b>		
Edulis Superba	4.9 a	4.4 a
Walter Faxon	4.0 b	3.7 b
<b>RED</b>		
Felix Supreme	5.9 a	5.2 a
Philippe Rivoire	4.8 b	4.1 b
Richard Carvel	4.6 b	4.0 b

\*Means of three replications of five flowers each. Means, by flower color, followed by different letters are significantly different at the 5.0% level of probability.

**Table 8. Vase life and diameter of fresh-cut peony flowers stored for 3 week at 2°C.**

<i>Cultivar</i>	<i>Vase life* (days)</i>	<i>Flower Diameter* (in.)</i>
Edulis Superba (pink)	5.0 a	4.9 a
Festiva Maxima (white)	4.0 b	5.4 a
Richard Carvel (red)	3.5 b	3.9 b

\*Means of three replications of five flowers each. Means followed by different letters are significantly different at the 5.0% level of probability.

**Table 9. Vase life and diameter of fresh-cut ‘Edulis Superba’ peony flowers stored at 2° C for 0-6 weeks, 1996.**

<i>Weeks</i>	<i>Vase Life* (days)</i>	<i>Diameter* (in.)</i>
0	5.3 ab	4.7 ab
1	5.4 a	4.7 ab
2	5.1 ab	4.5 ab
3	5.0 b	4.9 a
4	4.0 c	4.9 a
5	3.7 c	4.4 b

\*Means of three replications of five flowers each. Means followed by different letters are significantly different at the 5.0% level of probability.

**Table 10. Vase life and diameter of fresh-cut ‘Festiva Maxima’ peony flowers stored at 2° C for 0-6 weeks.**

<i>Week</i>	<i>Vase Life* (days)</i>	<i>Flower Diameter* (in.)</i>
0	5.1 a	5.7 a
1	4.8 a	5.9 a
2	4.3 b	5.5 a
3	4.0 b	5.4 a
4	4.0 b	5.5 a
5	4.0 b	5.7 a
6	1.9 c	4.7 b

\*Means of three replications of five flowers each. Means followed by different letters are significantly different at the 5.0% level of probability.

### **Prestorage Treatment Evaluations**

The results showed that none of the prestorage treatments affected performance of the flowers during the first 8 weeks of storage. Initially, hydrating the flowers with water gave the longest vase life, but after 2 weeks of storage, it gave the shortest. At 4 weeks both the control and the water gave the longest vase life, whereas, no differences occurred among the treatments at 6 and 8 weeks. At 10, 12, and 14 weeks, the sucrose solution consistently gave the best vase life. Although most of these differences were significant statistically, the sucrose solution and the floral preservative treated flowers showed vase lives a day or more longer than flowers in other treatments only at the end of the evaluation. Browning of the guard petals and mold first appeared at 8 weeks of storage for the water treatment. These problems were not prevalent on all treatments until 12 weeks of storage.

**Table 11. Vase life of fresh-cut ‘Shawnee Chief’ peony flowers after prestorage treatments (control, water, floral preservative and sucrose solution) and storage treatments (0-14 weeks at 1° C), 1996.**

<i>Treatment Storage Time (weeks)</i>	<i>Vase Life(days)*</i>			
	<i>Control</i>	<i>Water</i>	<i>Floral Preservative</i>	<i>10% Sucrose Solution</i>
0	5.1 B a	6.0 A a	5.2 Ba	5.4 Ba
2	5.0 A a	4.3 Bbc	5.0 Aab	4.9 Aa
4	4.3 A b	4.1 ABbc	4.0 Bc	4.0 Bb
6	3.7 b	4.0bc	4.0 c	4.0b
8	4.2 b	4.3bc	4.5bc	4.3 b
10	4.3 B b	4.5 Bb	4.3 Bc	5.0 Aa
12	1.7 B c	3.7 Ac	4.5 Abc	4.0 Ab
14	0.8 C d	1.6 Bd	2.8 A d	3.0 Ac

\* Vase life is the mean of three replications of five flowers each. For comparisons among treatments within each storage time, the means followed by different capital letters going horizontally across are different at the 5.0% level of probability. For comparisons of the different storage times within a treatment, the means followed by different lowercase letters going down vertically are different at the 5.0% level of probability.

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