

---

# POSTHARVEST TREATMENT OF SPECIALTY CUT FLOWERS

North Carolina State University Report for 2011

---

Alicain S. Carlson, Briggitte D. Crawford, John M. Dole, and Ingram F. McCall

Department of Horticultural Science  
North Carolina State University

*This project was supported by the American Floral Endowment, the Association of Specialty Cut Flower Growers Research Foundation, and numerous suppliers. The authors would like to thank Diane Mays, Benjamin Brindis, Pamela Taheri, and Iftikhar Ahmad for assisting with growing and harvesting the cut flowers.*

Every year we conduct vase life studies on promising species and cultivars from the ASCFG Perennial, Seed, and Woody trials. This year's trial included 21 new cultivars that we tested for their postharvest potential. About half the varieties came from two classic cut flower genera: *Helianthus* (sunflowers) and *Echinacea* (coneflowers); however, these weren't just any old sunflowers and coneflowers! We trialed a rainbow of colors, and various shapes, sizes, and color patterns, resulting in new twists on old favorites. Who says you can't teach an old flower new tricks?

This was definitely the year for bicolored sunflowers – we had 5 of them – but we had some classics too. There were lots of excellent patterns and colors to choose from based on your market's preference. 'ProCut Amber Glow' was definitely a project favorite with its angelic amber halo around its dark center. The picture just doesn't do it justice; you have to see it for yourself. 'ProCut Brilliance', with its ruffled orange-gold petals around a dark center, was also an interesting new take on the classic sunflower. The flower of 'ProCut Gold' looks very similar to 'Brilliance' in the petals, but has a fun green center. Growing 'Musicbox' was like tapping shuffle on your iPod – you get a little bit of everything. Petal colors ranged from a pale yellow to a vibrant orange that contrasted well with the dark center. Furthermore, some flowers were a solid color while others were bicolor. The inconsistency may bother some people, but it's sure to excite others. 'Valentine' had highlighter-yellow petals around a dark center. 'Musicbox' and 'Valentine' had smaller head and stem sizes than the other cultivars and would be perfect for bouquets.

The echinacea we trialed this year are not your mom's purple coneflower! New colors abound in the world of echinacea and may be helpful in getting your customers



excited. 'Flame Thrower' was an extremely productive plant, producing many long-stemmed, dark-centered, yellow-orange colored flowers. The flowers of 'Maui Sunshine' with their yellow cones and solid yellow petals gave us a sunny disposition. 'Milkshake' was unique with its single row of longer white petals under several rows of shorter fringed petals and a yellow-orange cone. 'Pink Double Delight' had the same petal arrangement as 'Milkshake', but in a great pink color and dark cone. However, even in the second year of growing this plant we did not get good doubling for a nice full pom-pom appearance around the cone. The warm orange-pink petals and dark cone of 'Sundown' definitely set it apart from the usual purple coneflower.

One interesting problem we experienced this year that you might encounter is sunflower moth (*Homoeosoma electellum*) on *Echinacea*. Stanton Gill did an excellent job during his talk at the ASCFG National Conference Growers' School informing us about how this pest has the potential to challenge our coneflower crops. The major signs we saw were

malformed cones and uneven or lack of petal formation caused by the larvae, which look like caterpillars, in the cones. When the flowers were brought inside the caterpillars were everywhere, posing a postharvest problem. It was definitely a learning experience.

## The Details

Field-grown flowers were harvested at the optimum stage of flower development and placed into tap water (0.21 EC, 6.1 pH). Stems were then sorted into 4 equal groups and placed in the following treatments:

- Hydrator only
- Holding preservative only
- Hydrator followed by holding preservative
- De-ionized (DI) water only (control)

Floralife Hydraflor 100 was used as the hydrator at 1.0 ounce/gallon and Floralife Professional was used as the holding preservative at 1.3 ounces/gallon. After treatment, stems were placed in DI water and held at 68+4F under approximately 200 ftc light for 12 hrs/day. The vase life for each stem was recorded. Termination point was typically when 50% of the flower(s)/florets on the stem were brown, wilted, drooped over, etc.

Our testing methods tend to produce the maximum vase life, which tells you the potential vase life of each species. We cut and process the stems rapidly, put one stem per jar, and use a postharvest temperature that is a bit cooler than a typical home in summer. These procedures were set up to provide a consistent environment so that anyone else should be able to repeat our work and get the same results. These factors combined typically add about 1 to 3 days to the vase life of some species compared to what a grower would usually get.

We also listed the minimum vase life for some cultivars. We harvest and test up to 60 stems per cultivar and present the average vase life. For some cultivars most of the stems died about the same time. With others, flowers were terminated over a long period – thus the vase life of some of the stems was much shorter than the average.

## The Results

### *Ageratum* ‘Everest Blue’

‘Everest Blue’ had the longest average vase life of 16.1 days in DI water. The addition of hydrator or holding solutions (or both) shortened the vase life by an average of at least 5.1 days. We harvested ‘Everest Blue’ when 75% of the flowers were fuzzy for best vase life. Our most common postharvest problem was drooping of the flowers.

### *Asclepias* ‘Oro’

Our second-year ‘Oro’ plants produced stems with an average vase life of 10.3 days, which were unaffected by our preservative treatments. Its gorgeous buds have a hint of red and open to a rich golden color. The unique seed pods might also be of interest; however, we did not do postharvest tests on the pods.



with the holding solution to get stems to perk up faster, but do not use a hydrator alone. We harvested stems with and without flowers. ‘Aramato’ had a unique look with its mottled purple foliage, purple stems, veins, and inflorescence with light purple/white flowers.

### *Calycanthus* ‘Hartlage Wine’

*Calycanthus* stems treated with a holding solution lasted longer (9.4 days) than untreated or treated with just a hydrator (6.1 days). We also noted that the foliage stayed hydrated well and closed buds will open.

### *Celosia* ‘Orange Peach’

This peach-colored plume celosia flower had an orange brainy tip that

*Growing ‘Musicbox’ was like tapping shuffle on your iPod – you get a little bit of everything. Petal colors ranged from a pale yellow to a vibrant orange that contrasted well with the dark center.*

### *Basil* ‘Aramato’

The addition of a holding solution is definitely recommended as it increased the vase life of ‘Aramato’ from 13.3 days without holding solution to 23.1 days. From our own observations, use hydrator

had an overall vase life of 31.8 days. The addition of hydrator alone is not recommended, as it lowered the vase life to 23.2 days. However, even the absolute shortest-lived ‘Orange Peach’ stem lasted 12 days, which is still awesome.



**'Pink Double Delight'**

### ***Celosia* 'Sunday Dark Pink'**

None of the treatments significantly affected vase life of 'Sunday Dark Pink', which had an overall vase life of 30.7 days. 'Sunday Dark Pink' had a small single pink plume and green foliage. As with other *Celosia* in the trial, stems were terminated for foliage issues or rooting in the vase rather than flower head issues.

### ***Craspedia* 'Sun Ball'**

We harvested 'Sun Ball' when flowers were showing full color, and that full color lasted for a long time. The different treatments did not have an effect and stems lasted for an average of 38.7 days. We terminated 'Sun Ball' when the yellow globe-shaped inflorescence faded to brown.

### ***Echinacea* 'Flame Thrower', 'Maui Sunshine', 'Milkshake', 'Pink Double Delight', and 'Sundown'**

For all the coneflowers tested this year the recommendation is the same: use a holding solution. 'Flame Thrower' was the one oddball that gave us some interesting results with the best vase life of 14.7 days when no preservatives were used. Also, a hydrator reduced its vase life. 'Maui Sunshine' averaged 11.7 days, 'Milkshake' averaged 8.8 days, 'Pink Double Delight' averaged 12.4 did not affect 'Music Box' producing an average vase life of 7.9 days. Vase life of 'Valentine' was improved by 2.4 days when a holding solution was used, giving a vase life of 11.3 days. The general trend we have been seeing for years is that holding solutions either increase vase life or have no effect and are not detrimental. Therefore, holding solution should be used with your sunflowers.

### ***Pepper* 'Orange Globe'**

The use of a holding solution is recommended for improved vase life of 'Orange Globe', as it brought the vase life from 19.9 days to 23.2 days. Stems were terminated when 50% of the peppers wrinkled. What little foliage 'Orange Globe' has around its peppers needs to be removed because it doesn't stay hydrated.

### ***Physocarpus* 'Coppertina'**

'Coppertina' stems benefited from any preservative treatment, which improved vase life to 12.3 days from 10 days when no preservatives were used. We harvested the stems with the red clusters of star-shaped seed pods, but terminated the stem when the foliage wilted or dried. 'Coppertina' has beautiful foliage that is a lighter red than 'Summer Wine' and 'Diablo'.

### ***Rudbeckia* 'Henry Eilers'**

'Henry Eilers' benefitted from the use of a holding solution, which yielded a vase life of 14.7 days. It had very long stems, especially in the second year, and multiple flowers per stem with tubular yellow petals and brown eyes. Keep a close eye on your buckets and vases because 'Henry Eilers' uses lots of water. We found that this cut made a great filler in our floral designs.

### ***Salix purpurea* 'Hakuro Nishiki'**

None of the treatments significantly affected the vase life of this willow, which averaged 10.1 days. Some stems started to root in the vase, but the beautiful variegated foliage still desiccated. The new wood was a golden yellow color, which has design potential even without the foliage.



**'Henry Eilers' in floral arrangement**