
Postharvest Treatment of Specialty Cut Flowers

North Carolina State University Report for 2010

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Every year we conduct vase life tests on promising species and cultivars from the ASCFG Perennial, Seed, and Woody trials. We will also test other interesting cultivars we are growing for various experiments and trials. This year 34 cultivars were evaluated. The amazing production, longevity and uniqueness of some of the plants we tested really stood out.

The marigolds were quite impressive in that they started producing flowers in May, and just didn't stop! Much to the dismay of our harvesting team, there was a sea of yellow and orange to wade through every time we harvested. Of the five cultivars in the trials, three were chosen for postharvest testing: 'American Babuda Yellow', 'American Babuda Deep Gold' and 'American Narai Yellow'. Each had a unique yellow hue and all lasted an average of at least one week. Flowers lasted longest when treated with a holding solution. These cultivars differed from typical marigolds by having much longer stems which were almost always over the 12-inch minimum harvest length. We also grew different varieties for other experiments, which produced much shorter stems. See the ASCFG trial summary for more information.

'Green Oat' sea oats had a fun inflorescence that not only provided nice movement in the landscape, but also made for a great cut. What was so impressive is that the stems lasted an average of a whopping 45 days. They faded to a tan that made them great to use dried, and the plants showed remarkable bronze inflorescences in the fall. This cultivar would definitely be recommended to anyone who has a fondness of grasses as cuts.

Another unique cut was callistemon 'Woodlander's Red.' While the average vase life was just a short 5.8 days, the pink-red flowers were fun and different and would work well as a vertical, visually light addition to a flower arrangement. Leaving the dark green leaves at the base and tip of the terminal inflorescences also provided a nice contrast to the pink petals. A couple things to note: all the itty-bitty flower parts tended to fall off as the

flowers aged and the leaves were a bit prickly to handle.

Over the years we have tested many sunflower varieties. This year we tested one from the ASCFG trials and from another trial for the Fred. C. Gloeckner Company. See the ASCFG trial summary for more information. Vase life of 'ProCut Orange', 'Sunrich Orange', 'Vincent Choice' and 'Vincent Fresh' was longest when a holding solution was used. A hydration solution also increased the vase life of 'Vincent Fresh'. 'Summer Breeze', 'Sunbright Golden Yellow', 'Sunbright Supreme', and 'Sunrich Orange' cut stems were not influenced by the postharvest treatments. All cultivars lasted at least 9 days when treated with a holding solution, except for 'Vincent Fresh', which lasted close to 8 days in a holding solution, and 9.6 days when treated with a hydrator followed by a holding solution.

How We Handled the Flowers

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 $68\pm 4^{\circ}\text{F}$ 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, 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 the summer time. 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 several 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.

And Now for the Results

Amaranthus ‘Mira’

‘Mira’ was tough to work with. The leaves had insect damage, and the stems and inflorescences varied in size so it was hard to sort the stems and determine what cut length to use. The inflorescences tended to bend over from their own weight, and droop more as they aged. Forget using this one for any upright arrangement. A holding solution slightly extended the vase life to more than 8 days, while the average was 7.3 days.

Annual Aster ‘Palette Mix’

This mix offered pink, purple, white, and red flowers. Flowers lasted a long time for all treatments, with an average vase life of 17 days. The hydrator treatment shortened their vase life, which we found interesting. However, even if the hydrator was used, the flowers still had a vase life of over two weeks.

Annual Aster ‘Semi Double White’

This aster lasted an average of 20.2 days. Hydrator shorted the vase life, and the longest vase life was obtained from using DI water.

Callistemon ‘Woodlander’s Red’

‘Woodlander’s Red’ had an average vase life of 5.8 days and the treatments did not affect the vase life. While the pinkish-red color was striking, a lot of flower parts tended to fall as the flowers aged. The local bee population loved this one in flower.

Celosia ‘Celway Terracotta’

This celosia had spiky inflorescences that were often in clusters with stems too short for our 12-inch minimum, but we were still able to get enough long stems to test the

vase life. While the light pink blooms dried, faded, and drooped with time, they still lasted an average of 23.2 days before being terminated. As the flowers aged, they also released tiny black seeds, which could be annoying. As with ‘Red Flame’, the holding solution reduced longevity, so it is not recommended.

Celosia ‘Red Flame’

This celosia often didn’t expand into the brainy appearance that celosias often take on; many stems had the wavy flower head, but didn’t have much substance to them. ‘Red Flame’ lasted 16.3 days on average before fading/browning or bending at the base of the inflorescence. Hydrator appeared to reduce vase life, while stems lasted the longest in DI water or with a holding solution.

Dianthus ‘Volcano Mix’

‘Volcano Mix’ offered a range of white, pink, and red shades, often mixed in the same flower head. The flowers lasted quite a while in vases, 15.4 days, just as one would expect of a dianthus. The treatments did not make a difference.

Echinacea ‘Tomato Soup’

This echinacea was the color of its name. As the flowers aged, their petals faded to the orange hue of its culinary comrade grilled cheese. The flowers lasted 11.7 days, and we recommend against the use of a hydrator.

Echinacea ‘Purity’

‘Purity’ offers a ring of white ray florets with a center of discs that mature from green to orange. Its vase life is nothing to be ashamed of at 11.4 days. The hydrator tended to shorten the vase life, while using just a holding solution provided the longest vase life.

Echinacea ‘Merlot’

We had several echinaceas in our second-year perennial trials in 2010, and we liked ‘Merlot’ because of its rich color (just like the wine). A holding solution is recommended, as the vase life went from around 8 days to 12 days with the addition of the holding solution.



Marigold ‘American Babuda Yellow’

The marigolds in our trials starting producing in May and did not stop until we cut down the plants.

‘American Babuda Yellow’ lasted an average of 8.4 days, and a holding solution is definitely recommended.

Marigold ‘American Babuda Deep Gold’

‘American Babuda Deep Gold’ was also a good producer and was the tallest marigold cultivar tested. It lasted an average of 11.8 days and, as for its yellow counterpart, a holding solution is recommended.

Marigold ‘American Narai Yellow’

‘American Narai Yellow’ lasted an average of 7.1 days and a holding solution is recommended.

Lisianthus ‘ABC 1-3 Misty Blue’

We had a number of lisianthus in the trials this year and looked at vase life of three. While they did have a nice first flush of blooms, their subsequent stems were mostly too short for our 12-inch minimum for harvesting. Upon a visit to a local grower with stunning, tall lisianthus, it could be concluded that this was because of our growing conditions – lissies definitely do better in high tunnels. With the delicacy of a lissy and its soft lavender-blue flower color, ‘ABC-1-3 Misty Blue’ was a looker. While its vase life varied from a minimum of 5 to a maximum of 17 days, the average life with a holding solution treatment was 12.9 days.

Lisianthus ‘Excalibur Pure Yellow’

The designation “pure yellow” perfectly describes the flawless flower color. The vase life averaged 15.6 days. Treatment did not make a difference in vase life.

Lisianthus ‘Rosita 2 Jade’

‘Rosita 2 Jade’ has a subtle green tinge to its flower color. The green color was hard to distinguish except when compared side by side to a yellow cultivar such as ‘Excalibur Pure Yellow’. However, it had the typical long lisianthus vase life of 14.6 days. Treatment did not affect vase life.

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Penstemon ‘Dark Towers’

The dainty soft pink florets of ‘Dark Towers’ created a nice contrast with its purplish-green foliage. Our cuts lasted an average of 9.3 days and the treatments made no difference in vase life.

Phlox ‘Blushing Shortwood’

This perennial was in its first year of our trial, but still produced enough harvestable stems to test. They lasted an average of 11 days, and it did not matter which treatment was used.

Scabiosa ‘Fama Deep Blue’

‘Fama Deep Blue’ had an average vase life of 9.3 days and vase life ranged from 2 to 14 days.

Scabiosa ‘Fama Deep Blue Improved’

‘Deep Blue Improved’ had an average vase life of 8.6 days and a range from 2 to 13 days, similar to ‘Fama Deep Blue.’

Scabiosa ‘Fama White’

This scabiosa had an overall vase life of 9.2 days. In a holding solution, it lasted closer to 10 days. Without a holding solution its vase life was closer to 8 days.

Scabiosa ‘Perfecta White’

‘Perfecta White’ had a vase life of 8.7 days and lasted about the same length of time regardless of treatment.

Sea Oats ‘Green Oat’

The inflorescences of ‘Green Oat’ would be great for those growing grasses. The minimum vase life was 17 days and the average vase life was an impressive 45.1 days. The stems did not droop, but rather faded to a tan color. They would work well in dried designs in addition to being a great filler in fresh cut arrangements and bouquets. If you’re really going for longevity, plain water is best, as our DI water control had the longest average vase life at 52 days.

Snapdragon ‘Chantilly Yellow’

The snapdragons did not agree with our hotter-than-normal summer. After their first flush of blooms,

regrowth was shorter than desired, and after that, the heat all but shut them down. The vase life of ‘Chantilly Yellow’ averaged 6.3 days, and use of a holding solution extended the average vase life by 3 to 4 days.

Snapdragon ‘Calima Pure White’

‘Calima Pure White’ had an average vase life of 7.2 days, and like ‘Chantilly Yellow,’ a holding solution extended the vase life.

Sunflower ‘Summer Breeze’

This cheery yellow sunflower had large flower heads – so large that we had to support their jars to avoid the weight of the flower tipping them over! It had a vase life of 8.6 days and the treatments did not make a difference.

Sunflower ‘Vincent Choice’

The cultivar flowered as fast as ‘ProCut Orange’ and vase life was longest, 11.1 days, when treated with a holding preservative. The hydrator had no effect.

Sunflower ‘Vincent Fresh’

Flowering at the same time as ‘Sunrich Gold’, the vase life of ‘Vincent Fresh’ was close to three days longer when both a hydrator and a holding solution (9.6 days) were used, as compared to just water (6.8 days).

Zinnia ‘Queen Red Lime’

‘Queen Red Lime’ offers dark pink disc florets, and ray florets with a variable combination of lime inside and pink outside. Some flowers were mostly pink and others were mostly lime. The flower color is unique in that it isn’t as vibrant as a lot of zinnias, so it might find a niche as a muted, down-to-earth color in arrangements. It lasted an average of 7.3 days, and a holding solution is recommended. The flowers often faded very quickly when they started to decrease in quality, rather than gradually fading/withering over the course of a few days.