

Handling Specialty Cut Flowers

North Carolina State University Report for 2005

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This project was supported by the ASCFG Research Foundation and numerous suppliers. The authors would like to thank Ingram McCall, Diane Mays, Beth Harden, Aliya Donnell, and Tina Krug for growing the cut flowers and for assisting with the postharvest studies.

They're beautiful but do they last? That is the question we strive to answer each year. With funding from the ASCFG Research Foundation, we conducted an initial postharvest screening on the most promising species/cultivars from the ASCFG seed, perennial, and woody trials. This year we screened 12 new cut flower species/cultivars. Cultivars with the longest vase life included *Ageratum* 'High Tide White', *Dianthus* 'White with Ring', *Dianthus* 'Experimental Sweet Scarlet', *Trachelium* 'Lake Louise Purple', *Zinnia* 'Uproar Rose', and *Zinnia* 'Zowie! Yellow Flame'.

Zinnias continue to provide interesting results for us. For the reasons listed under 'The Fine Print' we got a very long vase life for both 'Uproar Rose' and 'Zowie! Yellow Flame'. We had results similar to other years in that "less is more" with zinnias - stems should not be treated with both a hydrator and a holding preservative. This year the best results occurred when stems were cut into either water or water plus hydrator and then placed in water. We have heard reports of growers using holding preservatives with no problems - this may be due to different handling methods or different products from other companies being used. Regardless, everyone agrees that zinnia postharvest can be a delicate matter and stems can be damaged by using floral preservatives incorrectly. Be sure to do your own testing.

Results for the other species were also in line with previous year's testing. Delphinium is a beautiful flower but the vase life is a bit on the short side. From other trials we know that the anti-ethylene agent STS is effective on delphinium and should be tried by those growers who store or ship delphinium. Sunflowers respond to holding preservatives and that was confirmed again this year with both cultivars tested: 'Orange Queen' and 'Pro Cut Red/Lemon Bicolor'. The results we obtained with heuchera 'Florists Choice' confirmed previous work by Susan Han at the University of Massachusetts from several years ago - heucheras need floral preservatives.

One of the surprises for us was how well *ageratum* 'High Tide White' performed. The vase life was up to 21 days using a holding preservative and the minimum vase life for any stem was 12 days. Very promising results. Of course, as we explain below, the *ageratum* stems being held in only water rooted. We occasionally get this 'problem' with some species. It is a problem for us because the stems either don't die or take a very long time to die. Considering that *ageratum* is used primarily as a filler flower mixed with other species, many of which will need a holding preservative, it is unlikely that rooting will take place in a commercial situation. Regardless, *ageratum* 'High Tide White' had excellent vase life and shows great potential.

The Details

Field-grown flowers were harvested at the optimum stage of development into buckets of tap water. The stems were processed, sorted and placed in the following treatments:

- ◆ Hydrator only
- ◆ Holding preservative only
- ◆ Hydrator followed by holding preservative
- ◆ Distilled water only

Chrysal Professional RVB Hydrating Solution (hydrator) was used at the 0.2% rate and Chrysal Professional #2 Processing Solution (holding) was used at the 1% rate. After treatment, stems were placed at 68±4°F under approximately 200 ftc light for 12 hrs/day. We expect that similar products from other companies would provide similar results. Because of limited flower numbers we are not able to test all products at this stage of evaluation.

The Fine Print

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 little cooler than a typical home in the 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. All of these factors typically add about 1 to 3 days to the vase life of some species compared to that of a typical cut flower producer. For example, flowers with a vase life of 6 to 8 days in testing would probably last 5 to 7 days for a typical grower and flowers lasting 16 to 18 days would probably last 13 to 15 days. We especially want to note that when many flowers are placed together in a vase, it only takes one or two 'dirty' flowers to reduce the vase life of everything in the bouquet.

For several cultivars, we also listed the minimum vase life. We harvest and test 40 to 60 stems per cultivar and present the average vase life. With some cultivars most of the stems died about the same time. However, with other cultivars the flowers were terminated over a long period, thus the vase life of some of the stems was much shorter than the average. In those cases, we have included a minimum vase life.

We also use distilled water, which most people are not using. However, in most of our studies we found no difference between distilled water and our regular tap water (0.21 EC, 6.1 pH). So if you have good quality water then your results should be similar to ours.

Our Results

Ageratum 'High Tide White' A long-lasting cut flower with a minimum vase life of 12 days and lasting up to 21 with floral preservatives. Unfortunately (or fortunately, depending on your point of view), the stems placed in water without preservative started to form roots - plants have a way of lasting for a really long time and not dying when they have healthy roots. So as interesting as this is, the water-only treatments were not a valid test.

Ammi 'Graceland' Vase life was best, 12 days, when stems were treated with a hydrator or just water and placed in water without holding preservatives. When stems were placed in holding preservatives, vase life dropped to 9 days - so the holding preservative actually hurt this cultivar. The shortest vase life of any stem was 5 days.

Delphinium 'Guardian Blue' We did not have enough stems at one time to do a thorough test of this cultivar. However, we can say that stems lasted at least 6 days; vase life averaged 8 days when held in just water and 10 to 11 days when held in holding preservative.

Delphinium 'Candle Violet Shades' Another cultivar for which we were not able to harvest enough stems at one time for the best test. Vase life was at least 4 days and averaged 8 to 10 days regardless of treatment.

Dianthus 'White with Ring' Cut stems lasted 16 to 17 days when put into a holding preservative and only 11 to 12 days when held in water. Hydrator had no effect. Minimum vase life was 8 days.

Dianthus 'Experimental Sweet Scarlet' Cut stems lasted 20 to 22 days when put into a holding preservative and only 15 to 16 days when held in water. Hydrator had no effect. Minimum vase life was 11 days.

Helianthus 'Orange Queen' Cut stems lasted 10 to 11 days when put into a holding preservative and only 8 to 9 days when held in water. Minimum vase life was only 3 days with the holding preservatives and only 1 day in water.

Helianthus 'Pro Cut Red/Lemon Bicolor' Cut stems lasted 9 days when put into a holding preservative and only 6 to 7 days when held in water. Hydrator had no effect. Minimum vase life was 4 days for all treatments.

Heuchera 'Florists Choice'

This species needs floral preservatives to have a commercially viable vase life. The best vase life, 13 days, was obtained by cutting into a hydrator and then placing in a holding preservative. Cutting into water then putting in holding preservative produced a vase life of 10 days. The shortest vase life of any stem was 7 days when using a holding preservative. Cutting into a hydrator or plain water followed by putting stems into water produced a vase life of only 7 or 5 days, respectively. When stems were held only in water, the minimum vase life was only 2 days.



'Pro Cut Red/Lemon Bicolor'

Trachelium 'Lake Louise Purple' The longest vase life, 15 days, occurred with flowers harvested into water and then held in holding preservative. All other treatments produced a vase life of 11 to 13 days. The minimum vase life was 5 days.

Zinnia 'Uprouar Rose' Flowers pretreated with either a hydrator solution or water and then placed in just water had the longest vase life - 23 to 25 days. Holding preservative reduced vase life to 15-16 days. Minimum vase life was 9 days for flowers treated with holding preservative and 13 days for flowers only in water.

Zinnia 'Zowie! Yellow Flame' Flowers pretreated with either a hydrator solution or water and then placed in just water had the longest vase life - 31 to 33 days. Holding preservative reduced vase life to 21-22 days. Minimum vase life was 15 days for flowers treated with holding preservative and 20 days for flowers only in water.



'Candle Violet Shades'