

POSTHARVEST TREATMENT OF SPECIALTY CUT FLOWERS

North Carolina State University Report for 2016

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This project was supported by the Association of Specialty Cut Flower Growers Research Foundation, and numerous suppliers. The authors would like to thank Ben Bergmann and Peyton Daly 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. With the ASCFG's new trial format this year we tested a variety of greenhouse-grown lilies and a few perennials.

Lilies were the largest part of the trial this year. We enjoyed staking them as well as experiencing orange-dusted palms while handling these beauties. Don't assume plants from the same genus will have the same postharvest handling requirements. Some lilies such as 'John Hancock', 'Meryl', and 'Sorbonne' did not show a statistical increase in vase life when treated with hydrator or holding solution. On the other hand, a holding solution increased the vase life of 'Royal Sunset' and 'Dolly Madison'. Generally, holding solutions increased the number of buds that open, and prolonged vase life.

Of the perennials we received and planted this year, a few bloomed, but only two produced stems tall enough to harvest. *Eupatorium* 'Baby Joe' was the most resilient cut of the trial, lasting an average of 20 days. It was not affected by postharvest solutions, but produced harvestable flowers in its first year. It also boasted a high yield, and the longest vase life of any cultivar in the trial. We did not get enough *Filipendula* 'Venusta' stems to fill the whole experiment, but the stems tested needed a holding solution to reach their maximum average vase life.

The Details

Field-grown flowers were harvested into tap water (0.21 EC, 6.1 pH) at the optimum stage of flower development. Stems were then sorted into four equal groups and placed in the treatments below for the specified time and then placed into vases of deionized water.

- Hydrator only (4 hours)
- Holding preservative only (2 days)
- Hydrator for 4 hours followed by holding preservative for 2 days
- Tap water only (as a control)



Floralife Hydraflor 100 was used as the hydrator at 1.0 ounce per gallon and Floralife Professional was used as the holding preservative at 1.3 ounces per gallon (the rates listed on the packaging). After treatment, stems were placed in DI water and held at $68 \pm 2^\circ\text{F}$ under approximately 200 foot-candles of light for 12 hours per day. The vase life for each stem was recorded. Termination point was typically when 50% of the flower(s) or florets on the stem were brown, wilted, drooped over, etc.

What are Hydrating and Holding Solutions?

Some of you may be asking, "What is a hydrating or holding solution?" Floral preservatives can be categorized as either hydrating, holding, or vase solutions. Holding solutions contain a carbohydrate source (sugar) to encourage bud opening and/or flower longevity, and are applied for several hours up to approximately two days, by either growers or wholesalers before they get to the final consumer. Hydrating solutions are meant to be applied

right after harvest, prior to a holding solution, to facilitate water uptake and do not contain a carbohydrate source. Hydrating solutions are usually used for a short time, such as four hours. Vase solutions are generally applied by the consumer, commonly small packets, and contain a higher concentration of carbohydrates than a holding solution. While we do not test the use of vase solutions in these studies, it would be safe to assume that those flowers that perform better with a holding solution would likely last longer for your customers with a vase solution.

One More Thing

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 evaluation temperature that is a bit cooler than a typical home in a southern 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. It is also important to note that these results do not replace in-house testing as there are many on-farm factors that affect vase life.

The Results

Eupatorium ‘Baby Joe’ This was the fastest growing and most prolific bloomer of the trial. It flowered its first year in the ground and produced a shorter, second harvest. There was no difference between any of the treatments, but with an average vase life of 20 days this is one resilient flower. Be sure to get stems into water quickly. We noticed that if a stem was allowed to wilt, it never recovered.

Filipendula ‘Venusta’ This dainty flower resembles *Astilbe* from a distance, but with a flatter panicle. Growing it under part shade, we were able to harvest 16 stems long enough for the vase life treatments. Treating with holding solution provided the best average vase life at 6.7 days, while vase life in water averaged 4.3 days. We noticed some shattering throughout postharvest. Since production was on the low side the summer of 2016, we expect to get a better read on the vase solution requirements for this crop during the 2017 season.

Lily ‘Dolly Madison’ Although hydrator and holding solutions did not statistically improve vase life, they are still recommended as the average vase life was highest, 9 days, when treating with both.

Lily ‘John Hancock’ John Hancock was one of our favorites with its bright yellow-gold color and rusty, brown speckles. There was no increase to the 8.5-day vase life when treating with hydrator or holding solutions.



‘Baby Joe’



‘Venusta’



‘Dolly Madison’



‘John Hancock’

Lily ‘Meryl’ This was the most fragrant lily in the whole trial. It lasted for an average of 11.3 days, regardless of treatments.

Lily ‘Royal Sunset’ The variation in oranges made ‘Royal Sunset’ the most unique lily of the trial. Definitely treat this with a holding solution as it significantly increased vase life to 11 days compared to 9.5 in tap water. If possible, provide hydrator before the preservative as this will give the vase life a little boost. Hydrator alone did not statistically increase vase life.

Lily ‘Sorbonne’ ‘Sorbonne’ was very similar to ‘Meryl’. The average vase life was 9.8 days regardless of treatments.

Lily ‘Yellow Diamond’ Hydrator and holding treatments did not statistically affect vase life, giving ‘Yellow Diamond’ an average vase life of 7.7 days.



‘Meryl’



‘Royal Sunset’



‘Sorbonne’



‘Yellow Diamond’