# Preservative and Temperature Postharvest Treatments on *Hydrangea paniculata 'Kyushu'*

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## Nature of Work

*Hydrangea paniculata* is available wholesale as a cut stem from the Holland market. Some *H. paniculata* are available in this country as a cut stem through farmers' markets. A national commercial wholesale source of this stem is not readily available. *H. macrophylla* cultivars are the flowers that are usually grown for the cut flower market. The other hydrangea species—*H. arborescens*, smooth hydrangea; *H. paniculata*, panicled hydrangea; and *H. quercifolia*, oakleaf hydrangea—have been grown for landscape plants (1). Therefore, the ability to produce quality field-grown cut stems of the *H. paniculata* flower may offer an alternative income source to Kentucky farmers.

In 1999, a hydrangea cut-flower cultivar trial was established at the University of Kentucky Research and Education Center at Quicksand, Kentucky (2). In 2001, preliminary studies were conducted at the University of Kentucky to determine the effects of irrigation and pruning influence on hydrangea for fresh cut flower production (2). Cutting the existing *H. paniculata* shrubs back in the fall produced strong straight stems the next season that definitely had potential for the cut stem market. In the summer and fall of 2002, a preliminary study was conducted to see if *H. paniculata* cultivars had the potential to become a specialty cut flower. The results were reported at the 2003 SNA Conference and showed an average vase life of five to six days in 2002. The overall objectives of this experiment were to observe *H. paniculata 'Kyushu'* to see if it has a reasonable vase life, to observe interactions with the floral preservatives and extender, and to see if the stems responded differently to cold treatments.

No information could be found on the best floral preservative to be used on these plants, nor was there any information on the effects cold, wet storage would have on these stems. Cold storage could mimic the effects of shipping time as well as the ability of a wholesale florist to "hold" the plant material.

The study was initiated when 150 stems were harvested on Sept. 16, 2003, at 9:00 EST. Stems were harvested when the first and second row of sterile florets were fully developed. Dry stems were transported to the lab and cut to a 36-inch length. Stems were then placed into a hydrating solution (Pokon Professional #2) for one and one-half hours. The 'Kyushu' blooms were then divided into two 75-stem lots to be placed into their no cold storage treatment and cold storage treatment. The 75 stems for the cold storage treatment were placed into Prokona containers for wet storage at 35°F and 90 percent relative humidity(RH) for seven days. The other 75 stems were then placed directly into their randomized treatments in a storage facility with a temperature of 73°F and 90 percent RH. The eight treatments (per package directions) were:

1. Control using tap water with a pH of 7.5
2. Floralife Original Flower Food
3. Pokon & Chrysal Professional #3
4. Aquaplus
5. Floralife + Flora Novus XL
6. Pokon & Chrysal Professional #3 + Flora Novus XL
7. Aquaplus + Flora Novus XL
8. Flora Novus XL

A floral extender (Flora Novus XL), which claims to add days of life to flowers, was added to the floral preservatives in treatments 5 through 8.

Stems remained in the treatments until the stem tips wilted or the sterile florets showed the first brown color and the flowers were no longer of commercial value. For example, if the stem in vase 3 failed to rehydrate and remained wilted after initial treatment, the vase life was considered 0 days. If the sterile florets started browning on the third day, vase life was over and considered to be three days. The stems that remained in cold storage for seven days were then taken out of the cooler and were placed into their designated treatments as described with no cold treatments.

## Results and Discussion

The experiment was set up as a factorial experiment with eight replications using an ANOVA to determine the main effects and interactions that occurred with a P value <.05. The independent variable was the vase life. The three factors involved were the cold storage, preservative treatments, and extender. Wet, cold storage for seven days did seem to have a negative effect on the vase life of 'Kyushu,' as vase life was decreased by two days. Stems with no cold storage treatments had a mean vase life of 7.9 days, and stems in cold storage treatments had a vase life of 5.8 days (Figure 1).

The results with floral preservative treatments back up the idea that the cultivar would react differently with the different floral preservative treatments. Floralife treatment with no cold storage treatment was significantly better than either of the other two preservatives or the control (Figure 2). There was no difference between preservatives when stems were stored in cold prior to treatment; although all three preservatives were better than the control (Figure 3). The extender actually decreased the vase life by one to two days (Figure 4), but the extender + preservative interaction was not significant.

Questions to be addressed by future research to determine the maximum vase life of *H. paniculata* include: How long can these flowers remain in wet, cold storage before their quality/longevity is adversely affected? Does shipping and storage in a solution versus dry cold storage make a significant difference in vase life?

## Significance to Industry

Results of this study indicate that *H. paniculata 'Kyushu'* has the potential to be a fresh cut flower. Implementation could potentially develop a supply of *H. paniculata* for the wholesale fresh cut flower market. Controlling production practices, storage methods,

and preservation solutions can result in a hydrangea fresh cut flower market crop for growers interested in alternative farm incomes.

## Literature Cited

1. Armitage, A.M. and Judy Laushman. 2003. Specialty cut flowers. 2nd Ed. Timber Press, Portland Ore.
2. Dunwell Winston, Dwight Wolfe, and June Johnston.2001. Hydrangeas for cut flowers: 2000 observations. UK Nursery and Landscape Program 2001 Research Report, PR-450:8-9.

*Figure 1: Treatments with the same letter are not significantly different. The P value for this graph was <0.05.*

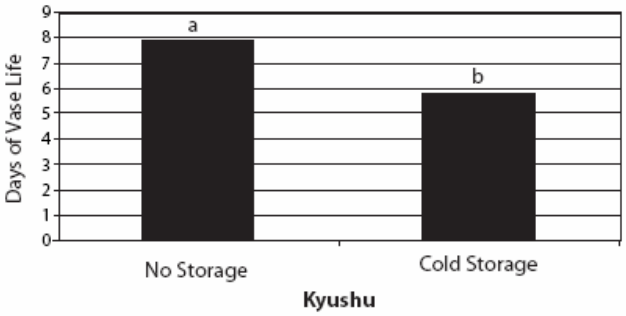


*Figure 2: Treatments with the same letter are not significantly different. This graph showed a P value <0.05.*

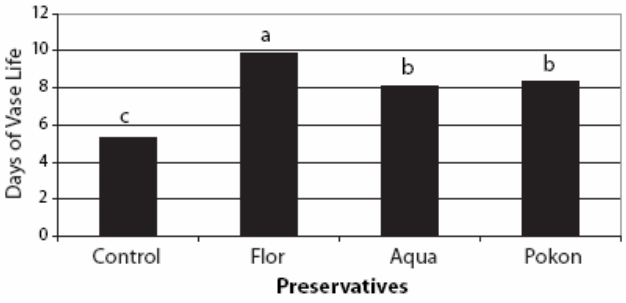


*Figure 3: Treatments with the same letter are not significantly different. This graph showed a P value <0.05.*

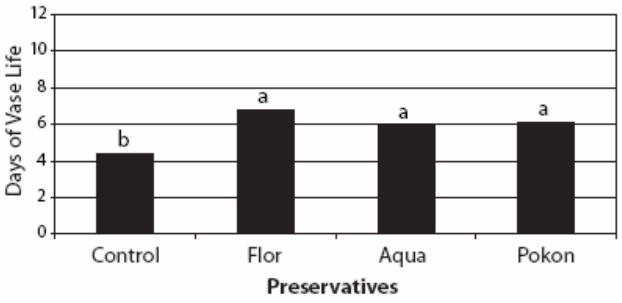


*Figure 4: Treatments with the same letter are not significantly different. This graph showed a P value <0.05.*