

Research Article

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The Effect of Stem Recutting and Floral Food on Vase Life of *Zinnia elegans*

Lauren E. Baskin¹, Coleman L. Etheredge¹ ✉, James DelPrince², Tongyin Li¹, Myles Landers³¹ Department of Plant and Soil Sciences, Mississippi State University, 75 B. S. Hood Rd., Mississippi State, MS 39762, USA² Mississippi State University Coastal Research and Extension Center, Mississippi State University, 1815 Popp's Ferry Rd., Biloxi, MS 39532, USA³ College of Business, Mississippi State University, 75 B. S. Hood Rd., Mississippi State, MS 39762, USA✉ Corresponding author: cle248@msstate.eduInternational Journal of Horticulture, 2026, Vol.16, No.3 doi: [10.5376/ijh.2026.16.0013](https://doi.org/10.5376/ijh.2026.16.0013)

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Abstract Locally grown specialty cut flowers require species-specific postharvest handling recommendations to maintain flower quality and extend vase life. Knowing the best care for flowers once removed from the mother plant is crucial information for farmers, florists, and the common consumer, as this will affect the longevity of the product and happiness of the consumer. This research examined zinnias variation in vase life between the following test groups: zinnias with untrimmed stems in tap water, zinnias with trimmed stems in tap water, zinnias with untrimmed stems in floral food solution, and zinnias with trimmed stems in floral food solution Across both harvests, recut stems held in floral food had the longest average vase life (16.46 d), followed by non-recut stems in floral food (14.70 d), non-recut stems in tap water (12.80 d), and recut stems in tap water (11.70 d). If adding a floral solution to the water is not an option, then the stems should be left untrimmed. Overall, the stems in tap water that were trimmed had the shortest vase life, and the stems in floral food solution that were trimmed lived the longest out of any of the groups.

Keywords Floral preservatives; Flower food; Locally grown; Specialty cut flowers; Vase life; *Zinnia elegans*

1 Introduction

The cut flower industry is dynamic and evolving as there have been many shifts in the current times and trends. One trend is the specialty cut flower movement. Specialty-cut flowers are defined as those that are locally produced in small quantities and stored for short time frames; compared to traditional cut flowers, which are produced in mass quantities and shipped globally (Darras, 2021). Specialty cut flower farmers can greatly profit from these niche plants, as one acre of properly maintained land can generate \$25,000 to \$30,000 in revenue annually (Byczynski, 2008). An example of a specialty cut flower that can be grown locally is the zinnia, *Zinnia elegans*. Zinnias show an opposite leaf pattern and range in wide varieties of colors with solid, variegated, and bicolor cultivars (Song et al., 2025). These flowers can exhibit a wide variety of flower structures, ranging from very simple petal arrangements to complex petal florets (Song et al., 2025). Zinnias are disease-resistant, when watered in a manner that prevents water from standing on the leaves (Esringü et al., 2022). They should be cultivated in areas with well-draining, fertile soil that receive a minimum of 8 hours of full sun (Fitzpatrick et al., 2024). A balanced fertilizer may be applied throughout the growing season, should the soil have any nutrient deficiencies, to ensure the plants flourish. Zinnias should be harvested just before full maturity, when blooms are almost fully opened, and placed in cool water with a small amount of floral preservative to ensure a maximum vase life for consumers (Laschkewitsch and Smith, 2000).

While many studies have been conducted on the vase life of *Zinnia elegans* (Carlson et al., 2015; Kalinowski et al., 2022), recent research has shown that the vase life of Zinnia may be negatively affected by a commonly recommended practice, cutting the ends of stems frequently (Kalinowski et al., 2022). These recent findings call into question specifically when zinnia stems should be cut to extend their vase life. The vase life of cut flowers is a critical factor in both the commercial floriculture industry and home floral use, directly influencing customer satisfaction and economic value. Once cut from the mother plant fresh cut flowers have a limited supply of sugars and water stored in their stems and leaves and require supplemental sugars and water supply to maintain flower health and prolong vase life (Pun and Ichimura, 2003). To maintain the longest possible vase life, it is