



Anil Ranwala, PhD.
 Chief Scientist

Water Uptake, Fresh Weight and Vase Life in Cut Flowers with Commercial Hydration Treatment and Flower Food

Introduction

Maintaining proper water balance and availability of the optimum amount of nutrients are key factors for longevity and quality of cut flowers after harvest. Typical commercial hydration solutions for cut flowers contain acidifiers and surfactants that help speed the water uptake and maintain water balance. The flower food formulations typically contain additional ingredients, such as a type of sugar (usually glucose or fructose). Cut flowers produce no or very little carbohydrates on their own as a result of low light conditions and lack of leaves for photosynthesis. These carbohydrates should be provided externally with the flower food formulation. The carbohydrates (sugar) provided at the correct concentration ensure the normal growth, opening and development of flowers, as well as maintaining the vibrant color of petals and leaves. These quality attributes are key factors that affect the consumer's perception of maximum enjoyment of their cut flowers and good vase longevity.

Floralife conducted the following experiment to investigate water uptake, fresh weight change and vase life of different types of flowers when placed in commercial hydration solution or in flower food compared to plain water.

Research

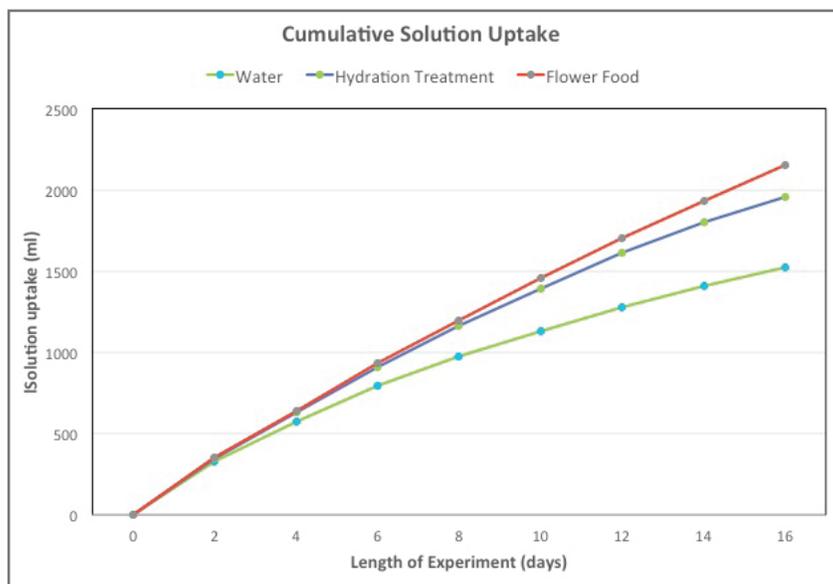
The experiment was carried out at the Research and Development Laboratory of Floralife in Walterboro, SC, USA. Cut flowers ('Taiga' Rose, 'White Atlantis' Chrysanthemum, 'Bodega' Alstroemeria and Solidago Aster) were obtained from a commercial source. All of the flowers were unpacked immediately upon arrival. The ends of the stems of all of the flower varieties were re-cut in air to yield an approximate 40 cm length for each stem. The leaves that would fall below water line were removed, and the stems were placed into vase solutions. The vases were placed in an interior evaluation room for observation (18-20 °C, 12hr/12hr light/dark daily cycle). For each treatment, there were 3 replicates (vases).

The following treatments were tested:

1. Water only (Control)
2. Commercial Hydration Treatment (Floralife HydraFlor® Clear ULTRA 100)
3. Commercial Flower Food (Floralife Crystal Clear®)

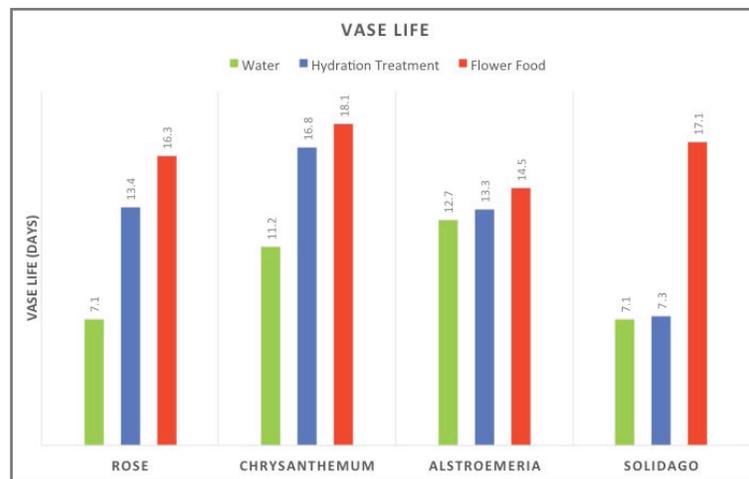
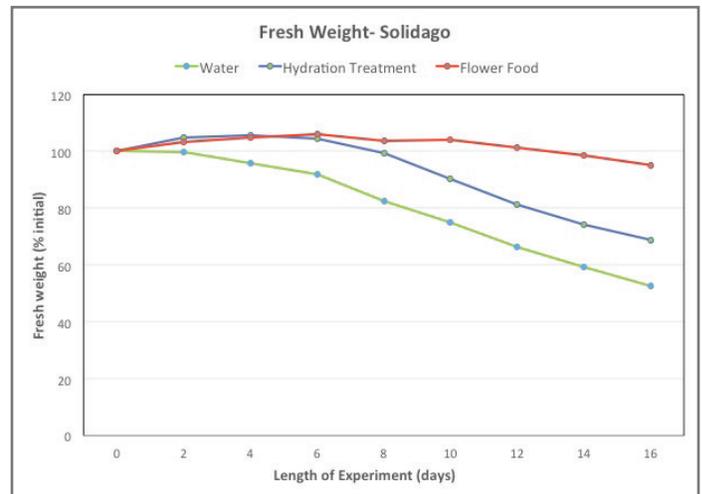
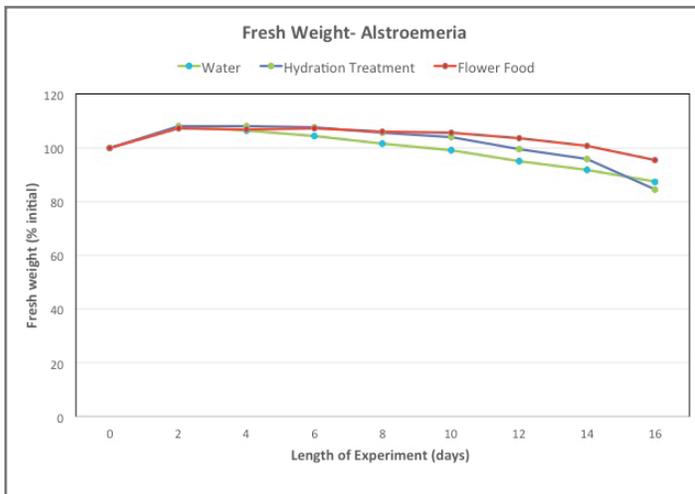
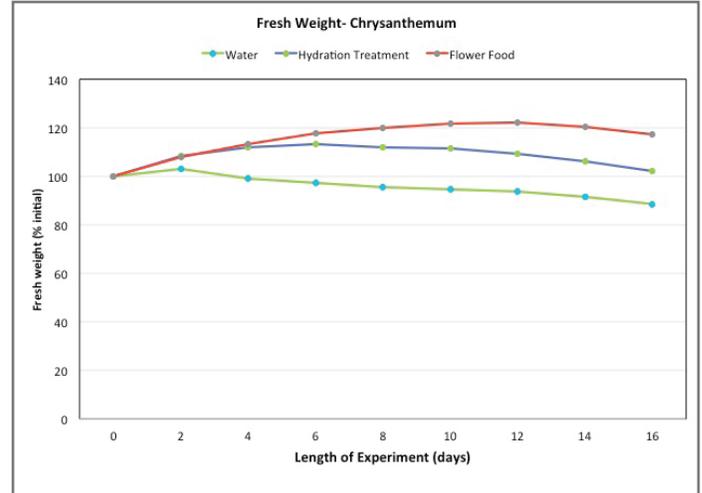
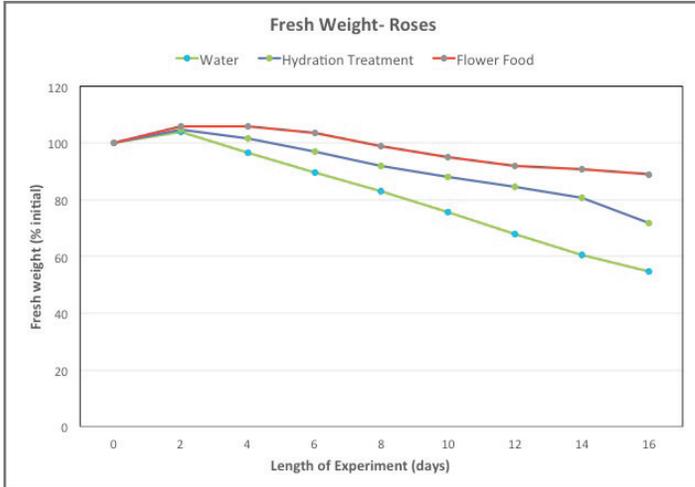
The following data was taken:

1. Solution uptake by flowers was measured at 2-day intervals up to day 16.
2. Fresh weight was measured for each flower type at 2-day intervals up to day 16
3. Vase life of flowers based on visual observation



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Results



Day 10*Control**HydraFlor® Clear ULTRA 100
Hydration Treatment**Floralife Crystal Clear®
Flower Food***Conclusion**

Water uptake by the flowers was higher with the hydration treatment and flower food solution when compared to water alone. Floralife Crystal Clear® flower food maintained better water uptake at later stages compared to the HydraFlor® Clear ULTRA hydration treatment, probably due to healthy flowers from the nutrient availability from the flower food. In all four flower types, fresh weight was increased or better maintained with the flower food, then followed by hydration treatment. When flowers were placed in water alone, fresh weight rapidly decreased especially in roses and solidago. The best vase life for all flower types was obtained with flower food. The data confirms the benefits of flower food in vases in terms of maintaining water balance and fresh weight resulting in better vase life. While hydration treatment is good for initial rehydration, the sugar in flower food solutions benefits flowers during long storage or in a vase.