



Anil Ranwala, PhD.
Chief Scientist

The Effectiveness of Floralife® D.C.D.® Industrial Cleaner when used on Flower Buckets and Vases

Background

Effective and continuous sanitation is a critical aspect to the proper care and handling of fresh cut flowers. If cleaned improperly, containers, vases, and cutting tools used in flower handling facilities can accumulate decaying plant material which act as breeding grounds for microbes. These microbes, bacteria and fungi, can grow very quickly and enter inside the flower stems. The small vessels within the stem which transport the necessary water and nutrients become clogged from the microbes, inhibiting proper solution uptake and causing the flowers to wilt. The end result is a shorter flower vase life and less happy customers.

This microbial contamination can also result in cloudy and very smelly solutions. Even more reason to keep good sanitation practices with any items in which flowers are in contact. Routine sanitization of flower buckets, coolers, and work stations is essential to avoid these undesirable conditions.

Floralife® D.C.D.® Industrial Cleaner is an EPA registered and approved disinfectant, cleaner, and deodorizer specifically for the horticulture industry. The combined triple action of this product helps to keep buckets, vases, tools and cooler surfaces clean, free of microbes, and absent of obnoxious odors. The product has a pleasant citrus fragrance making it friendlier in which to use over other types of cleaners.

Research

An experiment was conducted at the Floralife, Inc. Research Laboratory in Walterboro, SC to investigate the effects of cleaning and disinfecting on the subsequent growth of bacteria in flower buckets and vases. Cut flowers were stored in both plastic buckets and glass vases filled with water for more than two weeks to allow microbes to develop, turning the water cloudy and dirty. The dirty water solutions were then discarded and the following practices were implemented to determine the variances in microbial action.

Bucket and Vase Treatments:

1. No cleaning or rinsing
2. Rinsing with tap water only
3. Clean with label recommended dose of Floralife® D.C.D.® Industrial Cleaner

After the three treatments listed above were completed on both the buckets and vases, they were then allowed to air dry. After 3 days, the air dried buckets and vases were filled with tap water.

Fresh cut flowers of roses and chrysanthemums were recut and placed in only the glass vases filled with water, having undergone the three different treatments. The buckets had no flowers added, yet the water remained present in the three different treatments.

After 5 days, the number of bacteria in the solutions was determined with the use of the 3M Petrifilm™ technique. This method involves growing bacteria on a thin film coated with nutrients for optimum growth of all types of bacteria. After growth appears, the number of bacterial colonies on the film is counted and the number of bacteria in the original test solution is estimated. The results are given as the number of colony forming units (number of viable bacteria) per ml of water (cfu / ml). To have a perimeter as to how good or drastic a bacterial count may be, typical drinking tap water contains around 100 cfu / ml or less of bacteria. Published research data indicates bacterial counts above 10,000 cfu / ml can negatively affect cut flower life.

Results

The number of total bacteria (colony forming units per ml of solution) in water after 5 days in both the storage buckets and vases.

Bucket and Glass Vase Treatment	Buckets without flowers. Bacterial count in water.	Glass Vases without flowers. Bacterial count in water.	Glass Vases with flowers. Bacterial count in water.
1. No cleaning or rinsing	500,000	650,000	70,000,000
2. Rinsed with tap water only	9,000	11,000	8,000,000
3. Cleaned with Floralife® D.C.D.® Industrial Cleaner	100	100	350,000

Flowers in differently treated vases after 5 days



Treatments:

No Cleaning

Rinsed with water

Clean, with Floralife® D.C.D.® Industrial Cleaner

Conclusion

Cleaning and disinfecting with Floralife® D.C.D.® Industrial Cleaner significantly reduces the bacterial levels in flower buckets and vases. Data for the bucket treatment without flowers showed the bacterial count was 5,000 times higher when no cleaning was performed versus using the Floralife® D.C.D.® Cleaner. Data for the glass vase treatment without flowers shows the bacterial count is 6,500 times higher when no cleaning was performed.

The glass vase bacterial tests showed a much higher bacterial count when flowers were put into the vase, as would be expected since more bacteria are introduced to the water from flower stems. Using the cleaner on the glass vase with flowers reduced the bacterial growth substantially compared to a non-cleaned vase. As shown in the photo above, a high number of bacteria in the container water can lead to reduced vase life of flowers and can produce cloudy vase solutions. Cleaning flower containers can prolong the beauty and freshness of flowers for the consumer.