

Water Quality and Flower Food Effectiveness

Flower food comes as liquid concentrate or powder that should be mixed with water before use. One of the functions of flower food is to adjust the pH of water to a range where it is taken up effectively by the flowers. Research has shown that cut flowers take up water (or flower food solution) most effectively at pH 3.0 to 5.0. Proper water uptake is important in cut flowers to improve hydration, maintain cellular functions and vase life.

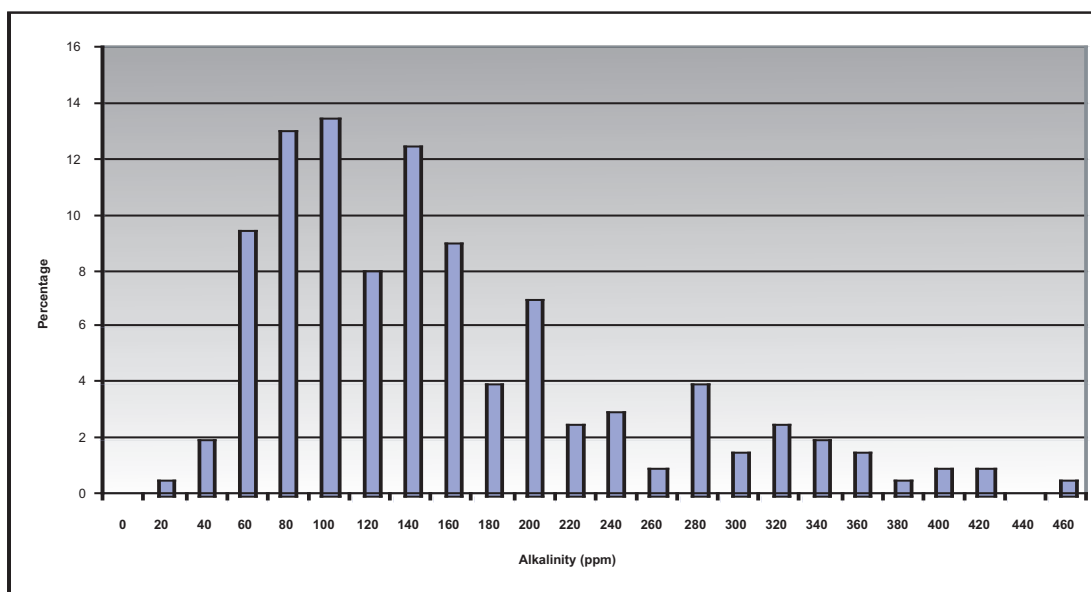
The quality of the water has a significant effect on the ability of the flower food to lower the pH to an effective range. There are several important parameters of water quality you should consider.

pH: The pH is a measure of how acidic or basic your water is on a scale of 0 to 14. A pH of less than 7 is acidic; 7 is neutral; and greater than 7 is basic. Typically, water alone has a pH range of 5 to 9. The pH value alone doesn't reveal much about water quality, especially the ability of water to resist pH changes (buffering capacity).

Hardness: The level of hardness refers to the amount of calcium and magnesium ions in the water (measured in ppm). While this gives an indication of the mineral content of the water, it is not a good indicator of the buffering capacity of water.

Alkalinity: This is the true measure of the buffering capacity (ability to resist pH changes) of water. A higher alkalinity means that the water contains a possible combination of high concentrations of carbonates, bicarbonates, and hydroxides that resist pH changes. For flower food use, water with alkalinity less than 60 ppm is considered pure; from 60 to 180 ppm is considered medium; and greater than 180 ppm is considered high alkalinity.

The following graph shows the distribution of alkalinity of water samples received by Floralife laboratory for testing from 200 locations representing 40 states throughout the United States. The alkalinity of the samples ranged from 20 to 460 ppm. Out of the 200 samples, 2.5% had pure water, 69.5% medium water, and 28% high alkalinity water.



For more information or to download a copy of our "Care and Handling Manual" online, visit www.floralife.com. Questions? e-mail: info@floralife.com

751 Thunderbolt Drive, Walterboro, SC 29488
Ph 800.323.3689 ~ 843.538.3839
Fax 800.471.4248
E-mail: info@floralife.com ~ www.floralife.com

Floralife® **RESEARCH UPDATE**

Regular flower food that has been formulated for use with medium water may not always adjust the pH of extreme alkalinity water to the effective pH range (3 to 5). Floralife has developed water-specific flower foods that are suitable for water with either extremes of alkalinity (Pure and Hard). The following table shows the pH of properly mixed flower food with water having extreme alkalinity.

Alkalinity of water (ppm)	pH with Regular Flower Food	pH with Water-Specific Flower Food
40	3.1	3.4
40	3.0	3.2
200	4.1	3.6
240	4.6	3.9
300	5.1	4.6
340	5.2	4.8
360	5.7	4.7
460	5.8	4.9

Conclusions

The quality of water used to mix flower food is important for the final pH and the effectiveness of flower food solution. Water-specific flower food formulations adjust the pH of extreme alkalinity water to optimum range for cut flowers better than regular flower food.

To have your water tested by Floralife® laboratories, send a plastic quart bottle of your water to:

Floralife®, Inc.
751 Thunderbolt Drive
Walterboro, SC 29488
Attn.: Laboratory

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