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Effects of Water Quality on Flower Food Performance

Introduction

Flower food is available as a liquid concentrate or powder that needs to be mixed with water prior to use. The quality of water has significant impact on the performance of the flower food. One of the functions of flower food is to lower the pH of the water to a range where it is taken up by the flowers most effectively. Research has shown cut flowers take up liquids (water or flower food solution) most effectively at a pH between the range of 3.0 and 5.0. Sufficient water uptake is important for cut flowers to improve hydration, maintain cellular functions and vase life.

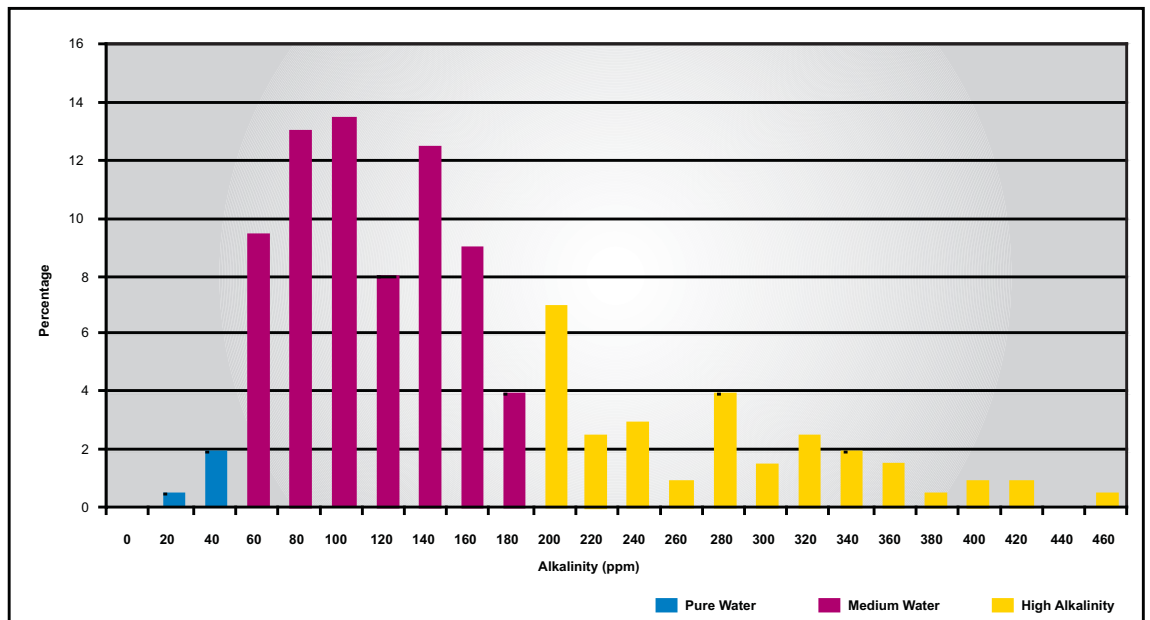
Water Quality Parameters

There are several important quality parameters that you should know about your water. The quality of water varies depending on the source, geographic location, and any water treatments.

pH	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 and determines the final pH when flower food is mixed with 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.
Total Dissolved Solids	Total dissolved solids (TDS) are a measure of total salt content in your water. The TDS is typically expressed as ppm. While moderate amounts of salts are good for cut flowers, too much of salts can adversely affect flower life. If the TDS level of your water is above 500 ppm, you should be concerned.

Data

Floralife laboratory conducts free water quality testing for customers. 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 percent had pure water, 69.5 percent medium water, and 28 percent high alkalinity water.



What if you have water with extreme alkalinity or hardness?

If you have extremely high alkalinity or hard water you may need to purify water before use. Two common methods of purifying water are reverse osmosis (RO) and deionization (DI). These techniques remove the salts in water. Softened water is not recommended for use with flower food since sodium ions added to water during the softening process may be harmful to flowers. Another option is to use water quality specific flower food. Floralife has water-specific flower foods that are suitable for water with either extremes of alkalinity (Pure and Hard). Water quality specific flower foods are available as in powder and eZ Dose® formats. To have your water tested by Floralife Laboratories, send a tightly sealed plastic quart bottle labeled with your name, company, address, and telephone information to:

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