

## Contradictions of Spring

"A flower's appeal is in its contradictions – so delicate in form yet strong in fragrance, so small in size yet big in beauty, so short in life yet long on effect." Terri Guillemets. Spring has sprung and is in full bloom, and we all want to capture it and bring it inside to enjoy. But, once the flowers are in the vase, they start to wilt and droop. We all know that a cut flower (and even those in the garden) aren't going to last as long as we would wish. But, can you extend the life of a cut flower? If so, how?

To extend the life of the blossoms, one has to understand that all flowers don't last. A flower is part of the life-cycle of a plant. The plant uses the flower to propagate. It is the reproductive organ of the plant, and therefore, is not destined to last very long. So, to keep flowers fresh, one is fighting the flower's own normal aging processes. Flowers require food, water, and protection from damage. Damage can come from the bumping or crushing as well as from fungus or bacteria. To keep flowers fresh; we only have to delay aging, keep them fed and watered, and protect them.

While we can't preserve the flower indefinitely, we can extend their life a little. To accomplish this, we have to understand a bit of the biology of the plant. Plants have a system to transport food and water to the various cells of the plant. The first step in keeping flowers fresh is to ensure that this system, the xylem, remains functional. This allows water and food to be transported to the flower while it is in the vase. Air bubbles are one source of potential blockage in the xylem. The bubbles block the flow of water and nutrients. Master gardeners recommend that when you get your cut flowers home, cut the stems under water to prevent air bubbles from forming which keeps the pathways flowing. Additionally, it is recommended that warm non-aerated water 110 degrees Fahrenheit be used as it has been slightly "degassed" to prevent the formation of bubbles in the xylem as the plant uses the water. (To help the "degassing" process, i.e. letting entrapped air escape from the water, fill your vase and let it sit on the counter for a bit.)

To keep the plant fresh, you need to ensure that it is fed and watered. You have likely heard of "home remedies" or even those powdered packets that come with the plant. These contain sugar or glucose. Normally, the plant produces the sugars that it needs through photosynthesis. Since the flower is now cut off from its food source, the water in the vase needs to contain some of the nutrients that the plant requires, thus the addition of the glucose. Master gardeners recommend using the florist packets as they contain the specific types of sugars required. If not, a couple of teaspoons of table sugar will help. Additionally, the quality of the water will impact the life of the flowers as plants prefer a slightly acidic water, a pH of about 3.5 to 5.0. Water that is high in dissolved solids or fluoride may have negative effects and reduce the life of the flower as these impede the transport of nutrients or are harmful to the plant.

Now you only have to protect it from aging and things that may cause harm like bacteria and fungus, a little bit of bleach or other germicide in the flower packet helps here. Aging can be slowed by keeping the flowers cool. This slows the plant's metabolic rate. But, be careful, storing the flowers in a household refrigerator may accelerate the aging process due to the fruits and vegetables stored there. Plants produce ethylene, which is utilized as a hormone by the plant. Ethylene is a growth regulator and is involved in abscission of the fruit, i.e. getting the fruit to detach from the plant, and senescence, the natural aging, of the flower. It is a natural product of the plant's metabolism. Thus, if you want to slow the aging process, you don't want to expose the flowers to more ethylene than they already produce.

Keeping flowers fresh is a simple process, you just have to figure out how to stop time. There may be a few ways, like capturing them in a photograph, or preserving them in glass. But, ultimately, the flowers are going to fade and wilt. We may be able to delay it a bit with an understanding of the processes that are occurring, but ultimately we have to enjoy them while we can.