

TECH TOOLS TO HELP YOU BEAT THE CLOCK

> Tick. Tick. Tick. Hear that?

Scientifically proven handling methods can reduce bloom stress from temperature, dehydration, carbohydrates, disease and mechanical damage ... but the clock starts ticking at harvest. Everything we do to save energy on the front-end fuels the flowers once they've reached our customers' hands.

Time Out for Temperature

High, low and fluctuating temperatures wreak havoc on blooms, so give your full attention to this crucial aspect of care. Use a **needle thermometer** — the simple kind from your kitchen — to check arrival temps of all in-bound shipments. Anything that arrives warmer than 42 F will likely have quality issues later (think: Botrytis). Calibrate the tool in a glass of slushy ice water. If it doesn't read 32 F, it's not working properly. (Don't splurge on a laser thermometer. Needles are more accurate.)

To check dry-pack boxes, stick the thermometer directly through cardboard into the center of a box located in the center of the pallet. If flowers arrive wet-packed, take the temperature of the bucket solution.

Your shipper should include a mobile temperature device that tracks temperature every hour during transit — this is especially important during busy holiday periods, when deliveries and quantities increase. Ask receiving crews to capture the device and check it to ensure no temperature spikes higher than 48 F occurred during transit. You have to be proactive. Freeze damage is visible on arrival, but stress from fluctuating temps may not show up for 24 hours. The best shipping and holding temperature range for cut flowers is 34 F to 36 F. Tropical blooms will get chill damage when colder than 50 F.

Be equally vigilant about your own cooler. Use a clipboard to record the temperature of a bucket solution first thing every morning. Ditch the wall thermometers. They're impossible to calibrate and subject to bumps in the confined space. Watch for fluctuations to stay on top of compressor problems. Arrange boxes in a way that allows good airflow around shelves and stacks; use pallets, rather than the floor, to increase airflow and cooling efficiency. Remind employees to close the door. Leaving it open, even for a short period, can cost you big time.

Your Longevity Toolbox

Here are some additional tools that will help you fight back against bloom stress:

A properly maintained and operated **injector** delivers the correct mix of flower food concentrate and water with every bucket fill. If you hand-dose, be meticulous about measurements. Under-dosing wastes money and results in a bacteria soup. Photograph the water level in each bucket size, measure the volume and hang photos in processing area with fill level and corresponding amount of T-bags or hand pumps of concentrate.

Inexpensive **pH strips** tell you when something other than tap water is in your vases and buckets. (Flow in stems is most efficient when pH level is slightly acidic, between 3.5 and 5.0.) If the pH is lower than 3.0, solutions are over-dosed and stem damage can occur. If pH is higher than 5.5, the solution is poorly mixed and will be ineffective. (One exception: Slow-release chlorine pills for gerberas give close to a neutral pH, between 6.5 and 7.0.)

A **chlorine tracer** checks if "active" chlorine is still in the solution. The indicator strips or indicator drops change color (amber) if active chlorine is present. (Remember, smelling chlorine doesn't tell you much; it's a volatile compound.) A light amber color means it's time to pop another pill into the bucket.

A farm-level postharvest treatment of **STS** effectively protects ethylene-sensitive blooms from damage. Plants such as hibiscus, campanula, potted orchids and kalanchoes require a treatment during transit in the trailer or individual sachets for boxes. Floralife's EthylBloc and Chrysal's Ethylene Buster both utilize the same active ingredient to prevent damage (1-MCP).

Technology is not limited to smart phones and computers. Smart handling methods and tracking tools ensure customers receive top quality flowers that last. 🌿

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