BACKGROUND

Before anyone can be a success in the world of retail, they must first be able to answer two basic questions: what customers want and how to give it to them. In the cut flower industry, what customers want is obvious enough – they want flowers that last.

Unfortunately, answering the second question isn’t so easy. Scientific studies show that many factors affect flower quality and longevity including disease, water supply, ethylene exposure, food supply, temperature and variety. It is temperature control, however, that proves time and again the most important ingredient for fresh, long lasting flowers.

KEEP IT COOL

From the moment it is cut until the moment it is placed into a floral preservative solution, fresh cut flowers only have access to the food stored in their leaves and petals. Flowers stored and shipped at higher temperatures respire more rapidly, using up greater amounts of their limited resources and age prematurely.

For example, Gerbera daisy one day after 5 days of storage at different storage temperatures demonstrates a drastic decline in vase life when stored at high temperatures.

![Temperature effects on 'Valentino' rose vase life.](image)

Keeping flowers cold slows down the respiration process so that blossoms slip into a sleep-like state. When these flowers are awakened, they possess a vase life like that of freshly cut flowers.

The optimum storage temperature for most non-tropical cut flowers is between 33°F and 35°F. Every degree above this range robs flowers of precious vase life and increases respiration rate. Tropical flowers such as anthurium, bird-of-paradise, ginger and tropical orchids are damaged when exposed to cold temperatures and therefore require warmer temperatures (50° to 55°F).

FROM GROWER TO FLORIST

The more time flowers spend at temperatures outside the optimal 33°F to 35°F range, the less time they will live and thrive for customers. This means that flowers shipped and stored at high temperatures, can use up days of valuable vase life before they even reach the florist.

Since temperatures often vary greatly on the journey from the field to the flower shop, it is important for florists to question suppliers about temperature control. Florists also must inspect shipments...
upon arrival to ensure quality for consumers.

When flowers first arrive, they should be visually inspected for telltale signs of temperature fluctuations such as heavy condensation in sleeves and mold on flowers or leaves. Condensation and mold are both signs that these flowers are not as fresh as they should be and will probably die prematurely.

Along with a careful visual inspection, newly arrived flowers should be subjected to some simple temperature readings. For boxed flowers, insert probes behind flower heads to get an accurate reading. For flowers that were transported wet, measure the temperature of the bucket solution. Either way, temperatures outside the 33°F to 35°F range mean that freshness has been compromised.

Fig. 2. High storage temperature reduced flower opening of ‘Black Magic’ rose.

IN THE SHOP

Once flowers are in the shop, florists must do their part to keep flowers cool and fresh. The most common error florists make is ignoring their coolers. Checking wall thermometers inside coolers once in a while is not enough to guarantee flower freshness. Place additional digital thermometers at varying heights throughout the cooler to identify warm and cool spots. Also, take the temperature of bucket solutions, as this temperature won’t fluctuate every time the cooler door is opened.

Flowers of ‘Red Jewel’ lasted twice as long when stored at 35°F compared to 49°F.

35°F  49°F

Ideally, an employee would check the cooler’s thermometers several times a day. At bare minimum, thermometers should be checked twice a day and cooler temperatures should be adjusted to maintain the proper 33°F to 35°F range. Flowers can withstand temperatures as low as 32°F without sustaining damage, but if the cooler is consistently too warm, a new thermostat may be necessary. If temperatures in the cooler vary too widely, have its air circulation checked.

It is also important to keep coolers free of plant debris and to disinfect the cooler walls, floor and shelves. Also, keep the time in storage to a minimum.

CONCLUSIONS

Vase life and quality is highly impacted when improper temperatures are used during transport and storage. For most cut flowers, ideal temperatures range from 33°F to 35°F. Tropical flowers require temperatures of 50° to 55°F. Temperatures above the optimum levels reduce vase life and quality. Keeping flowers cool slows down respiration rate and maximizes vase life.

IMPACT TO THE INDUSTRY

If florist shops take care to question their suppliers and vigilantly monitor temperatures in their own shops, they can ensure that their flowers will last once customers get them home. By selling outstanding quality flowers, florists can gain customer loyalty.

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