GOOD THINGS COME IN SMART PACKAGES

> So many things have to go right for cut flowers to maintain their freshness on the journey from a flower farm to a consumer's dining-room table. One piece of the puzzle that we often take for granted is packaging.

If you are a retail or wholesale florist, you probably don't pack flowers yourself, except for delivery. But when flowers arrive in the shop, what can the packaging tell you about quality?

Of course, you notice if a box containing flowers arrives looking damaged in any way. This can happen when the box is loaded onto a pallet, and it is all the more likely when the boxes on the pallet are not uniform in size.

Aside from such obvious damage, check that the box is perfectly flat on all sides, not even slightly convex. Bulging sides or top can indicate that the box has been packed too full.

Incorrectly packed boxes are problematic. Packed too loosely, injuries such as broken branchlets or bruised petals occur. Growers may be tempted to pack flowers too densely to save shipping costs. There is downside to this beyond the fact the flowers could be crushed by overpacking.

All About Airflow

If the flowers are packed too densely, there will not be enough airflow inside the box. And airflow is a key factor in packaging flowers for transport. It relates back to the first principle of flower freshness: keeping the flowers well chilled during transport and storage. Airflow is necessary for effective pre-cooling of the flowers and also for the air exchange that helps to keep temperature and humidity as even as possible inside the box.

Here's another thing to check when receiving a box of flowers: Are the air holes at either end of the box open? Are the flaps down? Are the air holes obstructed by pasted-on labels or by packing material, paper or plastic inside the box?

The air holes are there to enable pre-cooling, an essential step in the preparation of the boxes for shipping. Usually, flowers are not packed into boxes at the ideal low temperature of 33-36 degrees Fahrenheit; they are considerably warmer than that. Unless the box is then pre-cooled prior to shipping, heat becomes trapped inside it. The inside of the box may even heat up further during the flowers' journey, as the too-warm, living flowers respire.

Airflow within a shipping box is important, not just for pre-cooling, but to prevent pockets of warmth and excess humidity from developing within the box, as Anil Ranwala, chief scientist at Floralife, explains: "The ideal is to have a uniform microclimate inside the box."

And yes, control of humidity is also important. Flowers need a certain amount of humidity to keep from drying out. But when free moisture condenses into droplets, that condensation puts the flowers at risk of botrytis.

Ventilation Plus

Good airflow depends not only on the air holes and the product density but also on the flower sleeves, which may be macro-perforated (with large holes), micro-perforated (with small holes), or not perforated at all. Generally, perforations are necessary, because without them, air cannot move through the bunch or bouquet.

Most of the time, macro-perforated sleeves work best, according to Floralife director Steven Daum. The micro-perforated sleeves are manufactured by poking hot needles through plastic to make the holes. As the needles are withdrawn, the hot plastic can close over again, giving the impression of a tiny hole where really there is none.

But the best solution depends on the type of flower being shipped and the environment in which it is grown, dry or humid. Both Floralife and Chrysal make packaging products designed to help control humidity inside a flower box (Floralife Transport Paper and Chrysal FreshLiner), such as might be needed to protect hydrangeas that require water bags around the stem ends.

Controlling Ethylene

Another danger to flower freshness is ethylene, which the flowers themselves will produce more so if they are damaged or not very well chilled. Packaging can help protect flowers against ethylene, thanks to a variety of products that prevent the ethylene from latching onto the receptor sites in the flower. If you find a sachet in your box of shipped flowers, such as Floralife's EthylBloc™ or Chrysal Ethylene Buster, that is a good sign that your flowers have been protected.

Anti-ethylene treatments can also be administered in other ways, however, including truck kits that release the treatment inside a transport vehicle. Fortunately, the molecule at the heart of these treatments (1-Methylcyclopropene, or 1-MCP) is so small that it can pass easily through flower boxes.

Less Is More

It may seem like more packaging always means better protection for flowers in transport but in fact, overpackaging probably does more damage than underpackaging, says Daum. Why? The more packaging, the less airflow.

For example, Daum points to the cardboard collar that rests at the top of a bunch of roses, holding them together. "There is a tendency to use a collar measuring six to twelve inches," says Daum. That could be, because a wide collar gives a visual impression of better protection — or because rose growers want room to print their logo.

In fact, to perform its function, the collar only needs to be about three inches wide — a measure that has become standard for rose transport in the mass market, where branding incentives do not play the same role. "A wider collar only slows the air flow and the air exchange inside the box," says Daum. "It also increases the cost of the packaging, both in dollar terms and in terms of the environment."

In general, the less packaging, the lower the cost and the lower the carbon footprint. That said, any packaging that results in fresher flowers is well worth the cost. As Daum points out: "The greatest ecological savings is to be able to use every flower that's shipped."

Bruce Wright is a contributing writer to Floral Management.