

# Managing Lenticel Breakdown – Don't get caught by the snowball

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Lenticel breakdown and other lenticel-related disorders can be serious quality defects on apples. As with any fruit defect, it is important to correctly diagnose the defect to adapt management practices accordingly. Lenticel breakdown can be misdiagnosed as calcium burn, mild lenticel blotch pit, blister spot (*Pseudomonas syringae*), lenticel sunburn, bitter pit, and early stage speck rot (*Phacidiopycnis washingtonensis*) in Washington, etc. For diagnosis assistance, the reader is referred to the Lenticel Related Disorders Matrix from WSU ([bit.ly/LenticelDisorders](http://bit.ly/LenticelDisorders)).

Lenticel breakdown symptoms express after postharvest handling, but damage is set-up pre-harvest when fruit grow rapidly and micro-cracks develop in the fruit cuticle the epidermis and hypodermis (skin) cells are exposed to aggravation and desiccation. Symptoms are associated with lenticels because these cuticle micro-cracks are often associated with lenticels and the lenticel provides an access point for aggravants and water egress which can eventually result in cell death and pitting around the lenticel. Aggravants may be dust, environmental protectant spray particles, salts dissolved in water, or agro-chemicals.

Lower risk fruit are generally: smaller, firmer, have less starch clearing, lower soluble solids, higher titratable acidity, lower K, Mg, and N, and higher Ca. Lenticel breakdown is most typically seen in Gala and Fuji in Washington. Lenticel breakdown is caused by a number of factors, with these factors accumulating over time (*i.e.* 'snowballing' and finally resulting in severe losses from lenticel breakdown. Some factors that are known to increase the risk of lenticel breakdown are:

1. Unbalanced nutrition, specifically high (K+Mg):Ca and N:Ca ratios.
2. Rapid changes in weather resulting in rapid fruit growth.

3. Advanced maturity – especially with poor coloring strains when growers delay harvest for color improvement.
4. Delayed cooling postharvest, allowing fruit to continue ripening.
5. Pre-sizing as the additional handling tips high risk fruit over the edge.
6. Excessive storage duration for the maturity of the fruit.
7. A high temperature difference between (cold) fruit and warm or hot water on the packing line.
8. Adjuvants in acidifiers and soap (product specific).

Wax formulation and brush speed (within reason) were not found to aggravate lenticel breakdown. Key factors to reduce the risk of lenticel breakdown are:

1. balanced nutrition,
2. balanced crop load management,
3. adapt management practices based on weather during the growing season,
4. harvesting at optimal maturity,
5. good quality control at harvest and during storing,
6. rapid cooling appropriate for the cultivar,
7. not pre-sizing high risk fruit,
8. shortening the storage period on high risk fruit,
9. warming fruit before packing, and
10. using soap and acidifiers suitable for fruit at risk of developing lenticel breakdown.

A Dye Uptake Test for predicting lenticel breakdown was developed by Gene Kupferman at WSU. The original manuscript is available at [bit.ly/LBdyetest](https://bit.ly/LBdyetest).

Lenticel breakdown risk mitigation largely comes down to good pre- and post-harvest horticultural practices. Know your orchards, fruit, and packing lines to make good decisions regarding fruit quality, storage and handling so you are not caught by the lenticel breakdown snowball.