



Frost Cracks and Sunscald on Trees

Sunscald can occur any time of year but when it happens in combination with frost cracks during the winter it can do the most damage. Frost cracks present as vertical openings that can extend deep into the wood of the tree and are most often on the trunk although branches can also be affected. Frost cracks are not generally fatal to a tree but they can allow disease organisms and canker pathogens to enter the tree.



Image by Carol Quish

Conditions

Sunscald happens most frequently when a tree's canopy has been overly pruned or another shade-providing tree or man-made structure has been removed. The sudden over-exposure to sunlight can damage growing tissues.

Sunscald that develops into frost cracks is the result of the fluctuations in temperature that can occur during winter months and is most often found on the south or west side of the tree that is exposed to the sun. During the warmth of the day the sun warms the tree enough that the sap begins to run but when the temperatures drop below freezing at night the sap freezes in the trunk. As it contains large amounts of water, and water expands when it freezes, the sap expands within the phloem layer beneath the cambium layer which is just under the outer bark. This happens most on young trees or those with thin bark such as fruit trees. The rapid expansion and contraction of the layers causes the wood to separate and crack. This can recur over several winters, causing cracks to reopen and enlarge. Trees that experience a dry summer followed by a wet fall may experience a growth spurt that leaves it susceptible to frost cracks that winter. High nitrogen levels in the fall can also contribute to late-season growth so avoid the use of fertilizers that are high in nitrogen around young trees and fruit trees in the fall. Frost cracks are different from normal growth cracks in that growth cracks do not go as deep, the heartwood is not exposed, and there is no decay or oozing.

The following species are more likely to develop frost cracks: apple, ash, aspen, beech, birch, crabapple, cherry, cottonwood (poplar), elm, goldenrain tree, honey locust, horse chestnut, linden, London plane, maple, oak, peach, tuliptree, walnut, and willow. Evergreen trees are not as susceptible to sunscald since they retain their protective foliage throughout the year.

Symptoms

The symptoms of frost cracks and sunscald may not be obvious at first. Sometimes the outer layer of bark will not peel away until the following summer. The bark will be sunken and discolored, cracked and peeling. Surface bark will slough off. Longitudinal cracks can be several inches deep.

Control

- Damaged areas should not be painted or sealed but allowed to heal naturally.
- A knife dipped in a 10% bleach solution may be used to trim away any excess bark.
- Susceptible species should be planted where they do not have a strong south-southwest exposure.
- White tree wrap which reflects sunlight and keeps the bark temperature cooler should be applied in the fall prior to freezing temperatures.
- It should be removed in the spring as soon as the risk of freezing temperatures at night has passed. Wrap left on once the temperatures have warmed can keep the bark damp, encouraging disease. It may also harbor pests.
- Tree wrap should be used for 2-3 winters until the bark thickens.
- Don't fertilize trees in late summer to avoid a flush of new growth that may not harden off before winter. If you must fertilize in the fall do so after the leaves have dropped or in the spring.
- Be sure to water drought stressed trees up until a hard frost.
- Summer sunscald can be avoided by lightly pruning trees in the spring before they leaf out.
- Avoid mowing or using a string trimmer close to the trunk to prevent damage that could expand during the winter.

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