

News Article

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Are Your Young Trees Protected for Winter?

Vertical bark cracking can occur on young, thin-barked trees from injury received in winter months. Purdue experts recently explained the phenomenon and what you can do to protect your trees.

Kyle Daniel, nursery and landscape outreach specialist at Purdue University, explained that one of the most common type of bark cracking is termed southwest injury. "Southwest injury occurs during the winter months on the lower section of the trunk on the southwest side," he said. "This happens when there is a sudden temperature drop, for example, the sun going behind a cloud during the winter." He said the freeze-thaw cycle happens very quickly when there is a change from very warm to cold conditions, which results in a crack. If there is a snow pack, the reflection of sunlight on the bark will actually increase the temperature in the bark.

Daniel explained that southwest injury occurs on young, thin-barked trees, such as maple, redbud, apple and crabapple. Once trees are greater than about four inch caliper (diameter of trunk), the probability of damage diminishes. On trees four inches or less, tree guards (also called tree wraps) should be installed over each trunk. Trees that are under stress due to environmental factors, herbicide injury, and/or insect and disease are more susceptible to cracking, he said.

"A thin-barked tree lacks the amount of cork cells in thicker-barked trees, thus allowing the vascular tissue to be located very close to the bark," said Daniel. "Thick bark trees tend to be more resistant to cracking due to a greater lag in the freeze/thaw cycle."

Daniel said that no matter the initial cause of the crack, the common denominator of a crack in the bark is a pre-set wound. "The freeze-thaw cycle during the cold months causes the point of injury to expand and contract," said Daniel. "Like with your vehicle windshield, a small point of injury in bark will expand and contract due to sudden heating or cooling, thus causing a large crack."

Rosie Lerner, consumer horticulture specialist, and Janna Beckerman, professor of botany and plant pathology at Purdue University, recently co-wrote an article on southwest injury (also called sunscald). In it, they describe how the injury affects the cambium layer, or growth layer, just under the bark.

"The cambial temperature of south to southwest facing trees can reach into the 60-degree range while the shaded portion remains at freezing (32 degrees F)," they said. "Damage to the cambium (the thin, formative layer beneath the bark of the tree that gives rise to new cells and is responsible for secondary growth) can result in dieback or even death." They go on to say that this heating results in the tree

losing its dormancy, which is followed by lethal freezing when the sun sets. Sunscald, coupled with drought, can result in vertical frost cracks and death of the cambium, they said.

Lerner and Beckerman said that the current recommendation for newly planted, thin bark trees is that they should be wrapped for at least two winters or until mature bark is established. “Regardless of how many winters you wrap your trees, care must be taken to remove the wrapping in the spring to prevent moisture from collecting between the bark and the wrapping,” they said.

To sum up, one should wrap young thin-barked trees in fall (in fact now is later than optimum), and remove in spring as new growth begins. Wrap trees from ground level up to or near the first branch. White tree guards or other type of tree wrap can be used.