



# Lightning Struck Trees

Severe weather, thunder, lightning, and wailing sirens are enough to send anyone scrambling for safety. Unfortunately, trees in the landscape do not have that ability and are often struck by lightning. The impact of a lightning strike may be light, leaving no obvious damage, or it may be severe, with catastrophic results. The range of damage in between the two extremes can be manageable if care is provided in a timely and professional manner. The following excerpt from Dr. Kim Coder's article, "The Shocking Death of Trees" explains.

## **Damage Done**

Most trees along a lightning strike path are not killed. More than 20% of trees along a lightning path carry no visible injuries at all. However, trees presenting no immediate signs of lightning damage are still prone to increased stress, inefficient defenses, and susceptibility to pest attacks. Tree damage mirrors the strength and duration of the charge exchange in a lightning strike. The most serious tree injuries caused by lightning are from the acoustic wave (explosive shock wave) radiating from the lightning path. Additional tree damage can be caused by steam explosions from water just inside the bark.

The most visible result of a lightning shock wave is the splitting open of bark and shallow radial cracking of the wood directly beneath the lightning path. The explosive shock can also cause the tree to flex and energetically rebound, causing bark and wood loosening or expulsion. The shock wave shears-off cellular connections, pulls wood fibers apart, and loosens bark, phloem, cambium, and xylem. Multiple strokes in a single lightning strike can generate multiple shock waves. The shock waves bounce off the inside of the tree stem and cause tree tissue shifts along the stem's circumference.

The most noticeable symptom of a lightning strike on a tree, other than bark damage, is leaf wilting from disrupted water transport in the stem or roots. Permanent leaf wilting on a major branch or quadrant of the tree crown is usually the first noticeable symptom of a lightning strike if the tree was not clearly blown apart or killed. A similar form of damage is "recoverable foliage wilting" that comes and goes over several months, sometimes leading to eventual twig death. The least noticeable symptom is a slow decline of a branch or tree, over one to three years, with various pest and site constraints limiting new growth processes. Pests are a secondary problem attacking lightning-damaged trees, especially pines, and are attracted by volatile materials released into the air.

## **Treatment vs. Protection**

Once a tree is injured, treatment timing is critical. The faster treatments are commenced, the better the biological results. Starting treatment within 8 to 24 hours, especially if little drying of tissues has occurred, can provide a window for treatments such as watering, minimizing water loss, and using pressure to reattach tissues. After 16 to 36 hours, compartmentalization processes have been initiated, and tree reinvigoration actions will become more appropriate.

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