



Tree trunk damaged by construction equipment developing wound wood around the edges to eventually seal the wound. Photo by Purdue Extension - Forestry and Natural Resources.

How to treat damaged trees

Keeping trees healthy is important for many reasons, as they play a vital role in supporting ecosystems and enhancing our quality of life.

In Wyoming, severe weather often contributes to tree damage. Long stretches of drought can cause stress, while driving winds and hailstorms can leave a swath of destruction in their paths. Heavy, wet snows during spring can break the branches of even the sturdiest trees. In addition to weather-related injuries, an errant mower or string trimmer can cause mechanical damage, possibly leading to a tree's eventual demise.

To care for your trees properly, it's important to understand how they "heal" after incurring damage.

How trees repair damage

Fortunately, trees possess a remarkable ability to recover from damage. When a tree is wounded, whether from mechanical injury, disease, or environmental stress, it initiates a series of defense mechanisms to contain the damage. This process is known as compartmentalization of decay in trees, or CODIT.

CODIT involves four main stages:

1. Walling off the injured area through the formation of chemical and physical barriers, preventing the spread of pathogens and decay **vertically**;

- 2. Formation of callus tissue**, where the tree generates new growth to resist inward spread of infection, seal off the wound, and strengthen the affected area;
- 3. Formation of boundary zones**, which compartmentalize the damaged tissue from moving **laterally** into the healthy parts of the tree, limiting the spread of decay;
- 4. Creation of a barrier zone** that separates the wounded area from any new wood. This continued growth and adaptation allows the tree to adjust its structure and physiology to accommodate the damage and promote overall health.

Through the intricate CODIT process, trees can wall off damage from all sides, ensuring their long-term survival and vitality.

Types of damage

Trees may deal with many types of damage throughout their lifespan. Understanding the type of damage your tree has incurred can help you make informed decisions about what treatment to provide.

Mechanical damage is the type of physical injury that can be caused by a mower or string trimmer. Other examples of mechanical damage include excavation that damages the tree's roots, a high wind event



Tree girdled from mower damage. The damage goes all the way around the trunk. This tree will die. Photo by Cheyenne Urban Forestry.



Removing a branch damaged by fire blight. Photo by Adam Radosavljevic, stock.adobe.com.

snapping a branch off in the canopy, or poor pruning cuts. In fact, even a couple carving their initials into a tree causes mechanical damage.

Biological damage encompasses the many types of diseases and pests that can affect a tree's health. This type of damage often follows mechanical damage that creates entry points for pathogens and pests while the tree compartmentalizes the wound. For example, the bacteria that causes fire blight (*Erwinia amylovora*) might enter a susceptible tree through damage caused by a hailstorm.

Assessing the tree for both types of damage may require a trained eye. A certified arborist can aid in prescribing a treatment.

Assessment

Most tree assessments begin with a visual inspection. To stay safe during an evaluation, use personal protective equipment such as gloves, eye protection, and a hard hat. Take caution, especially when assessing a tree after a large weather event. Branches or damaged sections of the tree can fail unexpectedly, causing severe injury or even death. In situations like these, it is best to call a certified arborist to assess your tree's health.

The severity of damage can be affected by many factors, including tree species and vitality, accumulation of damage, and environmental stressors. So, how do you decide if it is worth keeping the tree? Sometimes the decision is obvious, as in the case of a girdled stem due to mower blight. That tree's xylem tissue has been destroyed, which means its ability to

move water and nutrients has been removed, and it will never recover. In this case, it would be best to remove the tree and plant a new one.

Other times, damage may not be as obvious—or even observable—from a ground-based, visual inspection. A bucket truck or climber is often required to assess larger trees and evaluate their health.

When assessing your tree's health and the severity of damage, remember that damage is cumulative. Even the healthiest trees will eventually succumb to multiple damage events.

Treatment

The treatment employed to assist in the tree's recovery depends on the type of damage. A broken branch in the canopy can easily be pruned off, but if the bark has peeled on the trunk, it may be worth consulting a professional.

Making good pruning cuts allows the tree to initiate and complete the CODIT process. Wound dressings like tar or paint can actually make the situation worse by holding moisture against the wound and accelerating decay. The treatment of a biological pest may require multiple chemical applications to reduce numbers sufficiently for the tree's survival.

How to help a damaged tree

Maintaining a tree's health after a damage event is crucial to its survival. Mitigating stress factors like drought or nutrient deficiencies can aid in the tree's eventual compartmentalization of the wound. Make sure your tree is receiving an adequate amount of water



Complete wound closure improves tree health and slows decay. Photo by Purdue Extension - Forestry and Natural Resources.



Wound dressings slow closure and can prevent healing. Photo by Purdue Extension - Forestry and Natural Resources.

during both the growing and dormant seasons.

To decrease the likelihood of further damage, implement preventative measures like mulching the area beneath the branches to keep the mower and string trimmer at bay. Be sure to monitor the “healing” process and continue to evaluate your tree’s health throughout the year.

Finally, follow regular tree care and maintenance

practices to ensure your tree recovers from damage and continues to thrive. For more information, check out the *Wyoming Tree Owner’s Manual* at <https://bit.ly/all-things-trees>.

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