Weathering the Storm

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Protect clients' trees from ice damage

Ice storms happen every year in the U.S., most severe in the Midwest and East Coast states. Annual losses from ice storms exceed $225 million in total damage to trees and property. A January 2007 ice storm caused severe damage to trees and landscaping in 12 U.S. states and three Canadian provinces.

Ice storms are defined by .25 inch or more of freezing rain that accumulates on surfaces (such as tree branches and electrical wires). These happen when a warm front moves in during winter weather (most occur in January), and rain falls from the warm front through the cold air underneath it, causing freezing rain. Trees are susceptible to the ravages of ice storms because of the weight of the ice that clings to the trees, which can cause branches and trunks to crack or break, or entire trees to fall over.

Before an ice storm barrels through your area, make sure you take the right steps to protect your clients' trees from the effects of this type of weather.

Photo by Allison Brinkman.

Ice storms are defined by .25 inch or more of freezing rain that accumulates on surfaces such as tree branches.

Ice storms and trees don't mix

Ice accumulation can increase the weight of a tree by 30 times or more, said Richard Hauer, Ph.D., assistant professor of urban forestry at the College of Natural Resources at the University of Wisconsin. Hauer is also co-author of the publication, "Trees and Ice Storms: The Development of Ice Storm Resistant Urban Tree Populations," available online at

http://web.extension.uiuc.edu/forestry/publications/pdf/urban_community_forestry/trees_and_ice_storms_2006.pdf.

When a tree is loaded with ice, any defects to the tree, such as decay, cracks, including bark or broken branches, exacerbates tree failure. Trees with more surface area from fine twigs branching or a broad canopy also make the tree more prone to damage, noted Hauer. Trees that are more resistant to ice storm damage (although none are entirely immune) are those with a course branching pattern; a pyramid form (such as evergreen trees or column-like trees, such as Swedish aspen, columnar maple and sweetgum); and those that are healthy without any decay or cracks.

Photo by Frances Ayres, University of Oklahoma.

Severe damage to campus trees at the University of Oklahoma was caused by an ice storm in December of 2007.

Tree damage can be more severe if an ice storm happens in the autumn before deciduous trees have dropped their leaves, or in the early spring just before leaves emerge, according to R.J. Lavern, manager of education and training for The Davey Tree Expert Company *(www.davey.com)*. "Some tree species or particular cultivars, such as Norway maple and the Bradford callery pear, are more susceptible to breakage because they tend to hold onto their leaves later into the autumn," said Lavern. Spring damage has less to do with the physical weight of the ice than with the damage the freezing temperatures cause to the new leaves that are just emerging. Trees that send out their leaves too early in the spring are in danger of experiencing this kind of damage caused by late freezes and ice storms.

Ice storms and wind are also a lethal combination, according Rex A. Bastian, Ph.D., vice president of field education and development at The Care of Trees company of Wheeling, Ill. *(www.thecareoftrees.com)*. "Trees can sustain more ice if there's less wind," he said. "The amount of damage to trees depends on the combination of ice present, wind speed and the duration of the storm."

Before an ice storm

Ice storms are inevitable, but what can you do now to prevent some of the damage from happening to your clients' trees?

Identify trees with poor structure. Some problems can be corrected with cabling and pruning. Find the weak branches and remove them; look for decay and prune or cut these branches. If a clients' landscape is filled with trees on the ice storm susceptible list (and particularly if these trees are close to the house or electrical wires), inform your client of the risks and make sure these trees are healthy.

Photo by Frances Ayres, University of Oklahoma.

Ice weighs heavily on these trees at the University of Oklahoma.

Diversify the landscape. If you are adding more trees to a landscape, choose trees from the more resistant list, and prune them while they are growing. “Young trees that are pruned properly from the time they are small have stronger branch attachments and are better able to withstand a higher level of ice,” said Bastian.

Make a vow to not go out and work during an ice storm. Because of the extreme safety issues with ice storms—with downed electrical lines often mixed in with the trees—it is extremely important not to send out any work crews during the storm. “Don’t go out for the quick dollars when you’re putting yourself in a situation where you or you employees can get killed,” said Bastian. The best advice you can give your clients who are not in extreme danger from the storm is to wait it out and leave the trees and damage alone until you or a certified arborist can go to the property to assess the damage. “If the ice is not especially thick or heavy, the rays of the winter sun will do a fine job of snow ice melt that won’t snap the tree branches, unless there was previous damage,” said Jesse Noel, an arborist with Hansen’s Tree Service in the St. Louis, Mo., area.

Make a plan. During or after an ice storm you will no doubt get a rush of calls from your clients that will strain you and your personnel. Make a plan now for how you will coordinate equipment and jobs. Make sure you know how to prioritize your jobs based on the severity of the problem and your longtime clients.

After the storm

When the storm is over, the first thing that needs to be done is to assess the damage. Are there trees that are hazardous to people or buildings? If so, these trees need to be dealt with first. Can the tree be pruned to restore it to health, or should the tree come down because of risk of decay or failure?

You need to look at a tree and decide how much of the tree will be left after pruning. Is what remains going to be stable? Will there be a lot of wounds that are open to disease and decay? Will the tree become a risk down the road when the decay works its way into the internal parts of the tree? Will the tree be an eyesore on the property once it is pruned to remove damage? Has the tree shifted, compromising root damage?

“You need to ask what the potential is for the tree’s future,” said Bastian.

Photo by Wayne Thompson.

Homeowners should be made aware of trees that are more susceptible to ice damage. When a storm occurs, the fallen branches and trees can damage vehicles and homes.

The best way to deal with ice damaged trees that don’t pose a hazard to people or property is to leave them alone, suggested Howard Eyre, assistant professor of landscape contracting and management at Delaware Valley College in Doylestown, Pa.

“The results from the most recent ice storms in the Northeast have shown that a ‘wait-and-see’ posture is often a good idea,” said Eyre. He said this has been observed by studying the backyard trees that were not immediately pruned after a storm. Trees, particularly deciduous trees, are capable of forming new branches in places where branches have been lost. “Therefore, waiting to see what the tree will do is a good idea. This may take two or three growth cycles and requires patience,” said Eyre.

The full extent of the damage of the ice storm might not be apparent until months, or even years, have gone by. Constant monitoring of a tree’s health will give you a good indicator if it is under stress. Look for signs of decay fungi and insect pests to determine the extent of the damage.

The likelihood of a damaged tree surviving an ice storm is related to the loss of the live crown, according to the Oklahoma Department of Agriculture, Food and Forestry. The greater the crown loss, the less likely it is that a tree will survive. Other factors include tree age (younger trees more likely to survive), species and the trees’ health before the storm.

“It is important to remember that trees have been growing for thousands of years and have experienced storms of greater magnitude than we can imagine,” said Eyre. “The trees have a mechanism that allows for survival and growth, it is our job to maximize that potential. The difficult and often challenging step in this process is often to just wait and see.”

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