

Ice Damage – Managing Woodland Damage and Health

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This fact sheet provides information on overall woodland health and the effects of ice damage on long-term woodland health and management.

Species Vary in Susceptibility

Significant ice build-up affects each species of tree differently. The degree of damage that a tree sustains is based on species, severity of ice, wind, and the timing of the ice. If ice occurs after the “sap rises” in late winter, branches breaking can easily pull the bark off the stem below. Prior to this time, the bark is tight on the tree and less damage occurs. Table 1 provides damage information on selected species from the ice storm of 2009 in western Kentucky (see Table 2 for a broader list of species).



Table 1. Damage of Selected Species in Western Kentucky during the Ice Storm of 2009

Species	Damage
black cherry	severe top, stem breakage, uprooting
black walnut	severe top
black oak (mature)	severe top, stem breakage, uprooting
southern red oak (mature)	severe top, stem breakage, uprooting
gum	severe
sugar maple	moderate damage
soft maples (red, silver)	severe top, stem breakage
white oak	moderate top damage
hickories	uprooting
young oaks	moderate top
yellow-poplar (tulip tree)	severe top and uprooting

Damage Assessment

Ice storms can significantly damage tops and branches. While the majority of damage will no doubt make the canopy look bad, much of this damage will eventually heal. However, there are trees that will be permanently injured. The following is a general list of injury that you should be concerned about.

- **Greater than 30% top reduction in oaks and hickories.** Oaks and hickories re-grow relatively slowly compared to other species such as yellow-poplar.
- **Greater than 50% top reduction in fast growing species.** Yellow-poplar, cottonwood, black walnut and other fast growing species can quickly regenerate top damage and can tolerate more top reduction than slower growing species.

- **Bent more than 50 to 60 degrees.** Generally larger trees that have bent this much do not recover and while may not die will remain permanently bent.
- **Main-stem below the crown or entire top broken.**
- **Uprooted.**

If a large number of trees have these types of damage, then a salvage operation to remove this material may be warranted. Contact a Kentucky Division of Forestry forester or a consulting forester to assist (see below).

Managing Damage

A professional forester can give you credible advice on how to manage damaged stands. There may be trees that can be used for local firewood or other on-farm uses. Timber Stand Improvement (TSI) work, including killing dam-

aged trees may be warranted to help remove injured trees that will never fully recover. You can use the TSI operation to enhance the growth of remaining valuable trees if it is implemented correctly. Cost share assistance can be obtained to help offset the cost of TSI. In areas where the damage is significant, a salvage operation (in the form of an improvement harvest) to remove the damage trees might be warranted. If wildlife management is an objective, the forester can work with a wildlife biologist from the Kentucky Department of Fish and Wildlife Resources to determine appropriate TSI or improvement harvest.

Use an Improvement Harvest to Salvage Timber

If a salvage operation is required, it would be prudent to contact the Kentucky Division of Forestry or a consulting forester for assistance (see “Ice Damage – Timber Salvage Decisions”). In many cases the professional forester can layout an improvement harvest that will not only get rid of damaged trees but will do it in a manner that will benefit the woodlands. There will be areas that can be regenerated and small openings might be warranted. There are areas where trees are damaged around valuable or potentially valuable trees that are unharmed. Selecting the proper

trees to remove and protecting the remaining valuable trees is important. Removing damaged timber without regards for the remaining trees can lead to increasing the damage in the woods.

Potential for Future Forest Fire Risk

The tops and branches on the ground are fuel for forest fires. In critical areas next to houses and structures or in areas of high value timber, cutting or driving over the tops with a dozer or other heavy equipment to get the majority of the woody debris within 2 to 3 feet of the ground will help debris retain moisture and rot faster reducing the potential of ignition.

Insects and Disease

Removing debris or damaged trees and helping debris to rot quickly (see above) are the only feasible treatments that can help reduce problems from insects and disease. Fortunately, when top damage is light the insect and disease problem will be minimal. There is little that can be done to reduce the rotting that will occur to standing trees (outside of cutting them down). There are some insects that thrive on weakened trees and these insects are likely to increase in woods where the ice storm is severe. Ask a professional forester to advise you whether a salvage sale or a treatment is necessary to reduce the hazard of insect build up.

Table 2: General Ice Damage Susceptibility

<i>Susceptible:</i>	<i>Intermediate:</i>	<i>Resistant:</i>
Aspen	Ashes	Baldcypress
Basswood	Beech	Blackgum
Black cherry	Black Walnut	Bur oak
Black locust	Boxelder	Catalpa
Black oak (mature)	Chestnut oak	Colorado blue spruce
Bradford pear	Eastern white pine	Crabapple
Butternut	Green ash	Eastern hemlock
Cottonwood (linden)	Loblolly pine	Eastern redcedar
Elms	Paper birch	Ginkgo
Hackberry	Pin oak	Hickories
Honey locust	Red maple	Hophornbeam
Pitch pine	Scarlet oak	Horsechestnut
Red elm	Scotch pine	Kentucky coffeetree
River birch	Slash pine	Norway maple
Siberian elm	Sourwood	Norway spruce
Silver maple	Sugar maple	Ohio buckeye
Virginia pine	Sycamore	Pignut hickory
Willow	Tamarack	Shagbark hickory
	Tulip poplar	Swamp white oak
	White ash	Sweetgum
	Yellow birch	White oak
		Yellow buckeye

Adapted from Hauer et al. (1993)

Ice Damage – Timber Salvage Decisions by J. Stringer. 2009. Cooperative Extension Service, University of Kentucky, College of Agriculture, Department of Forestry. FOR 09-02. 2pp. www.ukforestry.org

Ice Damage – Safety in the Woods J. Stringer. 2009. Cooperative Extension Service, University of Kentucky, College of Agriculture, Department of Forestry. FOR 09-01 2pp. www.ukforestry.org

Kentucky Division of Forestry. <http://forestry.ky.gov>, 502-564-4496

Kentucky Association of Consulting Foresters. www.kacf.org

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