Ice Storm 1998

Information Sheet #2 February 27, 1998
USDA Forest Service, Durham, NH

Will Winter Storm Injury Affect Hardwood Quality and Maple Sap Production?

Ice glazing, snowstorms, and high winds cause dramatic changes in the appearance of forests and sugarbush. Broken branches, snapped tops, and bent saplings are alarming to see. Fortunately, there is no need to panic or rush to change forest management plans.

While recent storms have been extensive, severely injured stands are highly localized. Trees with poor form are injured more frequently than trees with good form. In lightly to moderately affected stands, some trees will benefit from reduced competition. The greatest potential harm is in recently thinned, understocked stands.

After a storm, removal of hazardous trees and branches is an immediate priority. While the hazard cleanup is underway, there is time to learn how the storm damage and tree biology affects hardwood quality and maple sap production.

Key concepts:

- Trees can survive the loss of much their crown.
- Stain and decay take years to develop in living trees and standing snags.
- Stain develops rapidly in improperly handled logs and green lumber.
- Sugar in maple sap was formed in last year's leaves.
- Closure of tapholes made in previous years indicates tree vigor and vitality.

Winter buds contain the new leaves that will capture energy during the growing season. When next season's foliage is lost due to winter branch breakage, the tree compensates by increasing the efficiency of the remaining leaves and by producing leaves from buds that would have remained dormant. Although trees compensate very well, trees do decline and may die following the complete or near-complete loss of crown.

The spread of stain and decay depends on wound size and position, tree vigor and vitality, and local insects and pathogens. Stain initiated by breaks or snaps in the crown is not likely to extend into the butt log for three or more years following wounding. In a vigorously growing tree, new wood production may more than compensate for the loss in value due to a column of stain in the center of the tree. More damaging are wounds on the lower part of the stem or root flare such as those caused by logging.

Sugar maples with crowns completely destroyed this winter are likely to produce sap and are safe to tap this spring as they are likely to die. Trees with extensive but not complete crown loss are at risk, however, and should be tapped lightly, if at all. The stress due to tapping is not from the removal of sap, but in the additional wounding of the tree. Previous tapholes with good closure are indicators of healthy trees. Allow trees with poor closure of tapholes made in previous years to "rest".

Unlike living trees, dead wood has no active defense systems. Stain spreads rapidly in improperly handled and stored logs and green lumber.

Over the next several years, landowners and managers need to watch for:

- Hazard trees;
- Stem sprouts (epicormic branches) that reduce wood value;
- Outbreaks of insect pests.

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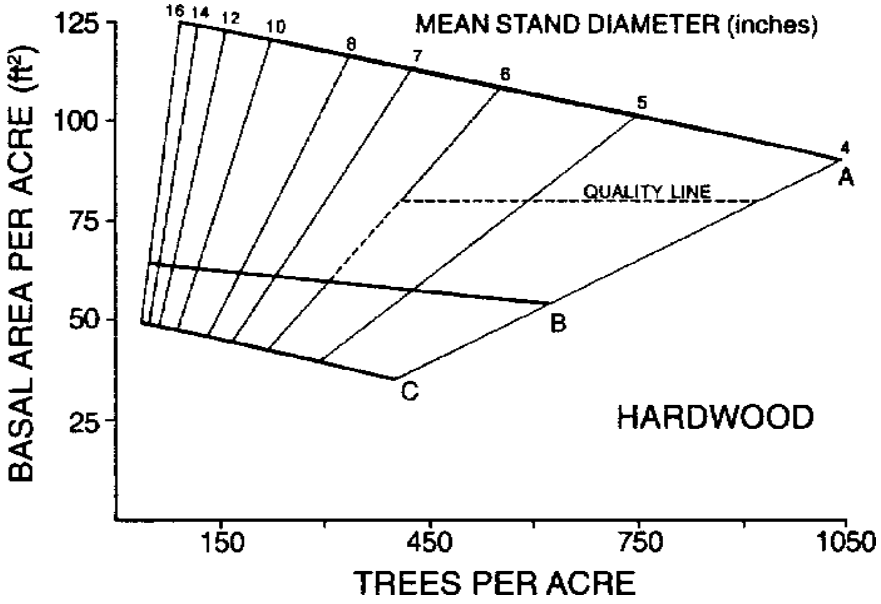
Survival and the response of individual trees to storm injury involves several factors, most of which are difficult to determine, including tree genetics and the condition of the trees prior to injury. However, expectations of individual tree survival and potential damage can be related to the amount of crown remaining after crown loss due to breakage:

Crown		
%lost	%remaining	Expectations
>75	<25	Few trees survive. Heavily infected survivors.
50 to 75	25 to 50	Many trees survive. Extensive infection from large broken tops and lower branches. Shattered crotches and torn bark increase severity. Growth suppression likely.
<50	>50	Most trees survive. Growth in some trees will slow. Lightly damaged trees on gap edges may grow more rapidly.

Survival and mortality of trees after storm injury are part of the larger process of forest stand development. Trees increase in size and decrease in number as a forest stand matures. The expected relationship among tree size, basal area, and numbers of trees per acre is contained in a hardwood stocking chart. The forest manager needs to ask whether the storm damage affected the stocking level of the stand from being overstocked (A line), optimally stocked (B line and quality line), or understocked (C line).



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Don't Panic! Stop, think and be patient.

Safety First and Foremost

Get Professional Advice.

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