



# Branching out

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Laurentian Forestry Centre



## FREEZING RAIN AND FORESTS: MINIMIZING DAMAGE

**T**he ice storm that hit southern Quebec in January 1998 caused substantial damage to forests. Researchers at the Laurentian Forestry Centre of the Canadian Forest Service have studied trees at 59 study sites<sup>1</sup> in the five years that followed the ice storm.

They have determined which factors favour the restoration of stands and have proposed silvicultural initiatives that can reduce the impact of freezing rain on woodlands.

Many stands and sites located in areas that received more than 40 mm of freezing rain have not yet recovered from damage caused by the 1998 ice storm (see box). Trees that were healthiest before the ice storm or trees that suffered the least damage during the storm have recovered more quickly. Initiatives taken before



Severely damaged maple stand after the January 1998 ice storm (January 20, 1998, Weedon-Centre, Quebec).  
Photo: Jean-Pierre Bérubé

the storm, such as thinnings carried out by sugarbush owners, helped revive tree vigour. Some species also proved to be more resilient than others<sup>2</sup>, including red oak, red spruce, white spruce, sugar maple and American beech. However, balsam fir, cherry trees and red maple are very susceptible to freezing rain.

Applying the following recommendations to woodland management will help reduce the impact of future ice storms:

- promote tree vigour through frequent low-intensity thinnings (3–5% of basal area at a time);
- ensure the health of stands by regularly removing trees with many trunk defects or trees that are declining or dead;
- favour species diversity;
- depending on the type of stand, favour resilient species.

### FOR FURTHER INFORMATION, PLEASE CONTACT:

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### 1998 ICE STORM

Ice storms are probably the only cause of large-scale mortality of deciduous trees in southern Quebec. In January 1998, precipitation fell for five days and totalled 120 mm in some areas. Experts estimate that trees become susceptible to major damage as soon as freezing rain accumulation exceeds 25 mm.

<sup>1</sup> Sites of the North American Maple Decline Project (NAMP) network and the Acid Rain National Early Warning System (ARNEWS). At the time of the ice storm, data on the condition of NAMP forests had been collected for at least 10 years, and ARNEWS data for 15 years. See issue Number 7 of *Branching out*.

<sup>2</sup> Resilience: ability to recover from disturbances.



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