

Glaze Damage On The Santee Experimental Forest

By ROBERT M. ROMANCIER And WILLIAM P. LEGRANDE

Southeastern Forest Experiment Station, Forest Service, USDA

A severe ice storm occurred in a narrow belt across the South Carolina low country on March 2 and 3, 1962. The first day ground temperatures were 33° F., but the rain from a general Atlantic storm froze as it fell on tree branches and utility lines. Before dark, a few branches and twigs snapped off, over-burdened by the increasing load of ice. Larger branches fell during the night.

By morning, electricity was off, telephones were out of order, and the forest was a gleaming shambles. Young trees were bent double, older ones were root-sprung or had lost leader or branches or both. Broken stubs, with no crown left at all, seemed to be everywhere.

The Santee Experimental Forest located in Berkeley County, South Carolina, was in one of the areas that received very heavy damage from this storm. An appraisal of the damage to loblolly pine on the Forest was made soon after the storm. We found that many of the trees were only slightly injured, with just a few branches gone, or perhaps one or two feet of the leader missing. Some had uninjured leaders but had

lost many of the lateral branches. Others had lost several feet of leader and perhaps half of the side branch-



FIGURE 2.—Here is a tree with the leader intact but many of the lateral branches are gone. It was retained, but its growth rate is uncertain.



FIGURE 3.—The future growth of this tree is uncertain, since the leader was broken out and 61 per cent of the branches are gone.

es. There were also the battered remnants of pine trees with only one or two branches left.

What does the forest manager do when he is faced with such a problem? Obviously, he cuts out the root-sprung trees, the extreme leaners, the broken stubs, and the ones that have little chance of surviving, let alone contributing to the growth of the stand. Yet some trees are going to be borderline. Cut or leave?

To help in our decisions, we fash-



FIGURE 4.—Here about 20 feet of leader is missing and so are 60 per cent of the branches. It is a "doubtful" tree, and should probably be cut.

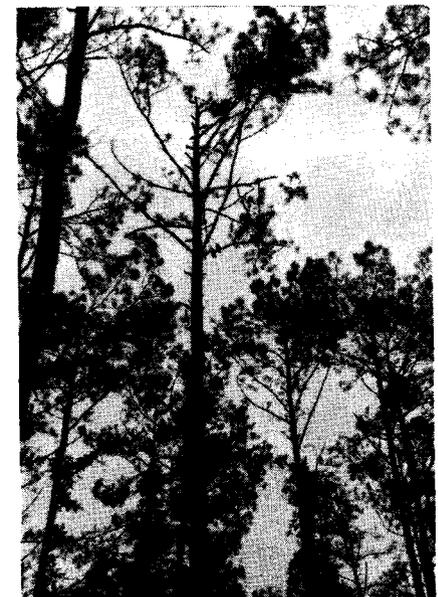


FIGURE 5.—This 18-inch sawtimber tree had 31 branches; it now has 12, lacks a leader, and is a poor risk. It should be cut.

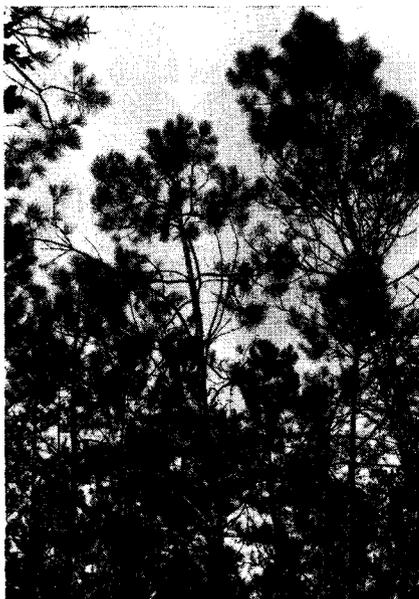


FIGURE 1.—This young pine has an undamaged leader with 85 per cent of its branches intact and should continue to make good growth.

ioned an interim marking guide that may be useful to other forest managers faced with a similar situation. This guide was based on crown and leader damage. We found that it was a considerable help in deciding whether or not to mark a tree for cutting. However, badly damaged trees were sometimes retained to prevent creating an opening, or trees only moderately damaged were cut if they were badly cankered or seemed unlikely to survive and grow.

Following the ice storm we estab-

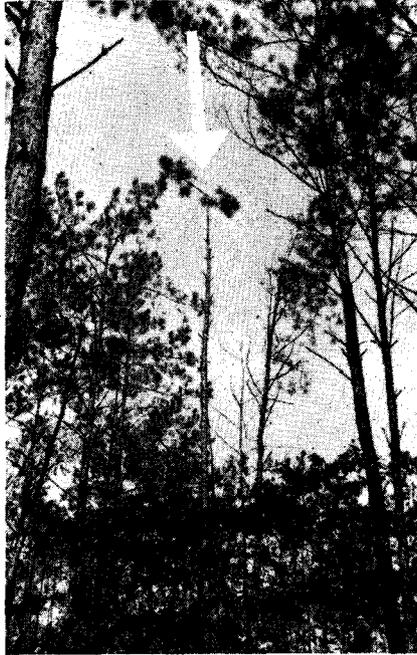


FIGURE 6.—This 8-inch tree lost at least 10 feet of its leader and 88 per cent of its branches. It was a poor risk and was cut.

lished a study on the Santee to determine the effects of various degrees of ice damage on tree growth. Almost 200 trees were included, representing a range in age, diameter, stand density, and crown damage. A remeasurement in five years should tell us what kind of growth can be expected of a tree with a certain degree of damage, and should provide a better basis for marking ice-damaged trees.



FIGURE 7.—Originally 83 feet tall, this 14.5-inch tree is now 20 feet shorter with 17 per cent of its branches left. It is one of the many trees that broke off at a fusiform canker. We cut this tree.

Interim marking guide for ice-damaged trees for the Santee Experimental Forest

Crown damage (per cent) ¹	Leader damage class ²			
	0	1	2	3
0-20	Leave	Leave	Leave	Cut
21-40	Leave	Leave	Leave	Cut
41-60	Leave	Leave	Doubtful	Cut
61-80	Leave	Doubtful	Cut	Cut
81-100	Cut	Cut	Cut	Cut

¹The crown damage classes were based on the percentage of live branches broken from the tree. Leader broken within top 10-15 per cent of crown; Class 2 = Main stem broken within crown (below Class 1); Class 3 = Main stem broken below crown.

²The main stem injuries were subdivided into four classes: Class 0 = No damage; Class 1 =

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