

ICE DAMAGE IN A CHRONOSEQUENCE OF AGROFORESTRY PINE PLANTATIONS IN ARKANSAS, U.S.A.

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POSTER SUMMARY

Potentially damaging ice storms are expected within the natural range of loblolly pine about every 6 years (Schultz 1997). The recovery of ice-damaged loblolly pine, particularly from stem bending, has not been well documented. The literature also is contradictory as to whether ice damage of loblolly pine is affected by tree spacing and thinning (Amateis and Burkhart 1996; Belanger and others 1996; Burton 1981), perhaps because of environmental differences (storm characteristics, topography, tree age, and management). Whether trees are in natural stands or plantations, ice damage is minimized when management fosters crown symmetry.

Acute (broken and leaning) and transient (bending) damage to loblolly pine were assessed in a case study of experimental agroforestry plantations following a late December 2000 ice storm. Stand ages were 7, 9, and 17 years old, and tree density ranged from 150 to 3,360 trees per ha in multirow and rectangular configurations. Agroforestry design influenced ice damage in 7-year-old stands, but no design had catastrophic loss. Wider tree spacing or lower stand density of 7-year-old trees increased stem breakage, whereas closer spacing increased bending. Most bent 7-year-old trees had straightened 8 months after

the storm, and this recovery was determined more by degree of initial bend rather than height or diameter. Nine-year-old loblolly pine had 19 percent more top breakage and 59 percent more stem breakage than shortleaf pine. Thinning from above increased susceptibility of ice damage to a 17-year-old stand compared to a nonthinned stand. The case study supports the cultivation of loblolly pine in areas prone to ice damage. Better understanding of tree recovery improves poststorm management decisions.

LITERATURE CITED

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