

Small Mammals Can Damage Young Hybrid Poplar Plantations

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Winter feeding habits of field mice (*Microtus* spp.) can cause serious losses in young plantations. Damage is most frequent in plantations established either adjacent to or in old fields with heavy sod. Severity of damage usually is related to animal population size, and, in some respects, a species preference.

Plantations of several clonal varieties of hybrid poplar had been successfully established in 1965, 1966, 1967, and 1969 with essentially no damage attributable to small mammals.

In 1970, a random mixture of hybrid poplar clones NE-49, -252, and -388 was planted in a previously tilled, central Pennsylvania field and mulched with black polyethylene. During the 1970-71 dormant season active feeding of small mammals was observed on the 1-yearold trees. The girdling ranged from the removal of small bark patches

to complete bark removal. A survey for the presence (or absence) of attack was conducted in March; and the damage appraised in September (end of the second growing season). Results of that evaluation of small mammal damage follow.

Mortality rates after the second growing season indicated that trees of clones NE-388 and -252 were the most frequently attacked (table 1). Based on the percentage of attacked trees that experienced top-kill but resprouted, and those that died, trees of clone 388 also received the most intense girdling (table 1).

In contrast to seedling losses due to small mammal attacks on non-resprouting species, the impact of

in total height and 6-inch stump diameter. The more frequently and intensely girdled clone (388) was affected the most (table 1).

These results suggest that young plantations of hybrid poplar exposed to high populations of small mammals are susceptible to damage. The extent of the damage may vary with clonal varieties.

a relatively high mice population was minor in the hybrid poplar plantation studied. Growth of the partly-girdled trees was essentially unaffected, but the trees that were more severely attacked suffered a reduction in 2-year total height and diameter. The net result on the attacked trees was a reduction

TABLE 1.—Small mammal damage on a young hybrid poplar plantation.

	Clones		
	NE-49	NE-252	NE-388
<i>All trees</i>			
Number of trees	270	270	270
Trees attacked (percent)	9	16	19
Mortality due to attack (percent)	0	2	3
Mortality due to all causes (percent)	6	7	9
Avg. 2 yr. total ht. (ft.)	7.5	9.7	11.3
Avg. 2 yr. 6"-stump dia. (in.)	0.75	0.85	0.82
<i>Attacked trees</i>			
Mortality (percent)	0	10	26
Top killed, but resprouted (percent)	21	9	16
Avg. 2 yr. total ht. (ft.)	6.9	8.5	9.4
Avg. 2 yr., 6"-stump dia. (in.)	0.71	0.77	0.68

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TABLE 1.—Average 10-week height in millimeters of yellow birch seedlings growing on A and B horizon soils treated with 10 combinations of N, P, K, and lime.

Treatment	Rate in Pounds per Acre of Nutrients Applied				A Horizon		B Horizon
	N	P	K	Lime	Avg. 10 wk. ht. mm	Avg. 10 wk. ht. mm	Avg. 10 wk. ht. mm
1	100	0	0	0	41		34
2	100	0	0	2000	39		33
3	100	0	100	2000	40		34
4	100	200	0	2000	99		92
5	100	400	0	2000	92		103
6	100	600	0	2000	99		102
7	100	200	100	2000	80		73
8	100	400	100	2000	68		77
9	100	600	100	2000	91		43
10	100	600	100	0	95		81
Average height of seedlings with P					89.4 mm		82.1 mm
Average height of seedlings without P					40.0 mm		33.3 mm



NEWS & REVIEWS

Trees That Resist Hurricanes

chances of breaking, especially

Following Hurricane Camille which destroyed much of the Gulf Coast in August 1969, the Forest Service's Southeastern Area, State and Private Forestry made a survey to find out something about wind resistance of the various tree species. At the same time they checked for tree resistance to uprooting and insect damage and came up with a handy Hurricane Resistance Table. Now, in a matter of moments, you can find how your trees rank generally on breaking, uprooting, or insect resistance.

Actually, five factors play a part in tree wind resistance, the agency points out. These are: 1) Strength of the wood; 2) shape and size of the crown; 3) extent of the root system; 4) moisture conditions before the storm; and 5) taper of the trunk.

Survey results show that shallow-rooted trees are easily uprooted, especially after the soil is saturated

by heavy rains. Too, trees growing in sandy soil are deeper rooted than trees growing in clay soil.

The taller the tree, the greater its

if the trunk has little taper. Tall, slim pines are very vulnerable, for example.

Open crowned and lacy foliaged
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Resistance of Species to Hurricane-Related Damages (In Descending Order of Resistance)

Breakage	Uprooting	Salt	Deterioration by Insects and Disease
Live oak	Live oak	Live oak	Live oak
Palm	Palm	Palm	Palm
Bald cypress	Bald cypress	Slash pine	Sweetgum
Pond cypress	Pond cypress	Longleaf pine	Water oak
Sweetgum	Tupelo gum	Pond cypress	Sycamore
Tupelo gum	Red cedar	Loblolly pine	Bald cypress
Mimosa	Sweetgum	Red cedar	Pond cypress
Dogwood	Sycamore	Tupelo gum	Southern red oak
Magnolia	Longleaf pine	Bald cypress	Magnolia
Sweet bay	Mimosa	Sweetgum	Tupelo gum
Southern red oak	Southern red oak	Water oak	Sweet bay
Water oak	Magnolia	Sycamore	Hickory
Sycamore	Slash pine	Sweet bay	Pecan
Longleaf pine	Loblolly pine	Southern red oak	Red cedar
Slash pine	Sweet bay	Hickory	Red maple
Loblolly pine	Water oak	Mimosa	Mimosa
Red cedar	Red maple	Pecan	Dogwood
Hickory	Dogwood	Magnolia	Longleaf pine
Red maple	Hickory	Red maple	Slash pine
Pecan	Pecan	Dogwood	Loblolly pine