

Suppression of Basal Sprouts on *Betula nigra*

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Nature of Work: River birch, *Betula nigra*, is considered a valuable landscape plant for both its tolerance to poorly drained sites as well as attractive exfoliating bark. Trees are most frequently sold as three to five trunk or as single trunk specimens. Both forms sell best with exfoliating bark visible.

River birch frequently produces multiple basal sprouts during the first few years of nursery production. These sprouts must be removed by repeated pruning to allow the development of single or three to five stem specimens as well as to facilitate performing cultural practices near the base of the tree. Any cultural practice that would reduce or eliminate the need for pruning would be welcome by river birch growers.

NAA sprays have demonstrated effectiveness in controlling basal sprouts on many crops (1,2,3). Therefore, tests were established on river birch to determine whether NAA sprays: 1. could reduce or eliminate the need for pruning and 2. were phytotoxic.

Experiment 1: On June 18, 1991 all sprouts and branches were removed from a height below 3 ft. then the basal two feet of each stem was sprayed with either water or aqueous solutions of 0.5, 1.0 or 2.0% NAA prepared from the commercial product 'Tre-Hold' (15.1% 1-Naphthaleneacetic acid, ethyl ester). The total number of sprouts per tree were counted at the end of the growing season. There were four trees per treatment in each of three replicates in a RCB design.

Experiment 2: March 17, 1992 trees were prepared as in Experiment 1, utilizing the same experimental design, then sprayed with 0.00, 0.25, 0.50 or 1.00 % NAA. Sprouts were counted on June 29, 1992.

Experiment 3: Sprouts and branches were not removed. March 17, 1992 plants were sprayed with 0.0, 0.5 or 1.0% NAA. Treatment consisted of single trees with five replicates in a completely random design.

Monthly visual inspection was made for phytotoxicity in all three experiments.

Results and Discussion: The results of experiment one (Table 1) were promising with all three spray treatments having significantly fewer basal sprouts and no phytotoxicity. However, there were no significant differences among NAA concentrations.

In experiment two (Table 1) a lower rate, 0.25% NAA, was added to the test to determine whether a lower concentration could be used and still suppress sprout development. Fifteen weeks after spraying, all NAA treatments had significantly fewer basal sprouts than the control with no significant difference among NAA treatments. No phytotoxicity occurred as a result of spring NAA spray application.

Table 1. Number of basal sprouts on trunk pruned river birch following spraying with NAA.

Percent NAA	1991	1992
Control	7.6 a	1.9 a
0.25		0.3 b
0.50	2.5 b	0.3 b
1.00	1.2 b	0.0 b
2.00	0.3 b	

†Rp05 Duncan's New Multiple Range Test

Experiment three was designed to determine whether pruning was necessary before spraying. These trees were not pruned before they were sprayed. Existing basal sprouts were not burned back or damaged by the sprays. No significant differences existed in the number of basal sprouts present after fifteen weeks regardless of spray concentration.

Significance to Industry: 1. NAA sprays significantly reduced the number of basal sprouts occurring on field grown river birch while causing no phytotoxicity. While sprouts were not eliminated entirely in all trees, labor needed to prune should be drastically reduced. The duration of this response and the possible need for annual or more frequent reapplication has not yet been determined. 2. Trees must have existing basal sprouts removed before they are treated. NAA sprays will not control existing sprouts at the concentrations tested.

Literature Cited

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