

EFFECT OF TREE SHELTERS ON ABOVE-GROUND STEM BIOMASS

LEAF NUMBERS AND SIZE, AND HEIGHT GROWTH

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Abstract: Tree shelters have been tested and shown to be effective in several circumstances regarding hardwood regeneration, especially with northern red oak (*Quercus rubra* L.). A study was initiated to quantify how tree shelters affected quantity, size and biomass of leaves, the number of growth flushes, and the above ground stem biomass of planted northern red oak. Six treatments were established: (1) no tree shelters, (2) standard 4 foot high tree shelters, (3) a 4 foot high tree shelter made of shade cloth (50% shade) and (4) the application of woody brush control on half of each of the three established treatments. Across all treatments in 1995, seedlings averaged 12 inches of height growth during the first flush. Fifty-two percent of these seedlings grew an additional 5 inches during a second growth flush and 16% flushed a third time. In 1996, 24% of the seedlings had four growth flushes. The average growth extensions for each flush were 11, 9, 6, and 3 inches, respectively. Randomly selected seedlings were harvested in 1995 and 1996 to evaluate stem biomass, leaf and bud numbers and leaf area. In 1995, sampled seedlings averaged a height of 50 cm with stems having 17 buds/seedling, 25 leaves/seedling and 38 cm² surface area/leaf. In 1996, sampled seedlings averaged a height of 79 cm with stems having 60 buds/seedling, 39 leaves/seedling and 42 cm² surface area/leaf. It appears that plastic tree shelters were beneficial to seedling growth, chemical brush control was marginally effective and shade cloth shelters were ineffective in stimulating growth.

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