

THE EFFECTS OF THINNING AND GYPSY MOTH DEFOLIATION ON WOOD VOLUME GROWTH IN OAKS

Mary Ann Fajvan¹, Jim Rentch², and Kurt W. Gottschalk¹

¹U.S. Forest Service, Northern Research Station
180 Canfield St., Morgantown, WV 26505

²Division of Forestry and Natural Resources, West Virginia University
P.O. Box 6125, Morgantown, WV 26505

ABSTRACT

Stem dissection and dendroecological methods were used to examine the effects of thinning and defoliation by gypsy moth (*Lymantria dispar* L.) on wood volume increment in oaks (*Quercus rubra* L., *Quercus alba* L., *Quercus prinus* L.). A model was developed to evaluate radial volume increment growth at three time periods: before defoliation, during defoliation, and after defoliation, as a function of species, defoliation intensity, and crown position. Volume increment during these same periods was also compared at different stem locations. Trees were defoliated for 2 consecutive years, and results indicated that volume loss was greater during the second year of defoliation with complete recovery

taking 2-3 years after defoliation. Oaks in thinned stands had reductions in annual volume increment during defoliation similar to those in the unthinned stand. Annual volume increment demonstrated a decreasing trend from stump to base of the live crown, and volume increment of the lowest log (from stump height to 1.37 m) was always higher than that of upper log sections, even during defoliation. Both earlywood and latewood increments were reduced during defoliation; however, latewood reductions were distributed along entire stems while earlywood reductions were greater on upper stem sections within the crown.