

THE EFFECTS OF SILVICULTURAL TREATMENTS ON OAK HEIGHT AND BASAL
DIAMETER GROWTH AND OAK REGENERATION ABUNDANCE FOLLOWING A
WOODY BIOMASS REMOVAL DURING HARVEST IN THE MISSOURI OZARKS

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ABSTRACT

Following a biomass harvest in the Missouri Ozarks, oak stump sprouts and seedling sprouts can significantly contribute to the presence of oaks in the future stand. A study to evaluate oak regeneration dynamics directly following a biomass harvest was initiated on the University Forest Conservation Area in Butler County, Missouri in the spring of 2009. Three hundred permanent subplots were established directly following the harvest to monitor 530 newly regenerated oak and hickory trees. The height and basal diameter of the trees were monitored for 2 consecutive growing seasons. These measurements were used to produce a logistic regression model to determine the probability these trees would have of obtaining specific average annual height growth thresholds.

Results from a logistic regression analysis of the silvicultural study indicate that as over story density increases the probability of understory trees achieving a higher annual height growth threshold significantly decreases. When the over story basal area was reduced below 50 square feet per acre or less significant increases in height and basal diameter were observed. However, as over story basal area exceeded 50 square feet per acre especially once basal area surpassed 100 square feet per acre a significant decrease in height growth of understory trees was observed.