

AN ASSESSMENT OF THE WHOLE TREE WEIGHT, WOOD DENSITY, AND SPECIFIC GRAVITY OF FOUR SPECIES GROUPS IN WASHINGTON COUNTY, MISSOURI

Charles D. Keating

Dr. David R. Larsen, Thesis Supervisor

ABSTRACT

New methods of scaling logs by weight are becoming more prevalent in the Ozark forests of Missouri. In 2009, a major weather event known as a derecho downed millions of board feet of timber in Missouri and the ensuing salvage harvest following the event necessitated the need for a faster method of scaling logs at area sawmills. It is now common in Missouri for sawmills to assume that a green board foot (bf) of oak (*Quercus spp.*) will weigh approximately 12 pounds (lbs.). This study focuses on a review of the 12 lb./bf. rule to see if the method is accurately estimating board foot volumes in logs and if not, to see whether it is over or underestimating the volumes. Four species groups were selected for harvest; white oak (*Quercus alba*), black oak (*Quercus velutina*), post oak (*Quercus stellata*), and hickories (*Carya spp.*) which were not separated into specific species. Of these species groups, 220 trees were selected for harvest and felled following the collection of the diameter (in.), total height (ft.), and crown height (ft.). Upon felling, the weights of each individual specimen were collected through the use of a load cell equipped front end loader. The total weight of the trees were collected prior to bucking and followed with the collection of the weight of the merchantable portion of the stem alone, without the tree top, and the weights of any sawlogs bucked from the merchantable stem. The data collected were used to produce averages of weight per board foot that are species specific to some of Missouri's oaks species and hickories and that will allow for better estimation of board feet volume at the sawmill.