UNDERSTANDING EARLY HEIGHT GROWTH OF OAK REGENERATION FOLLOWING SEASONAL PRESCRIBED FIRES

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The 4.5-ft stem height and accompanying 0.50-inch basal diameter are widely regarded as the minimum size thresholds when evaluating oak regeneration for final harvest of the overstory. These two stem characteristics were compared to root collar diameter by regression analysis as to their explanatory ability of early height growth of oak regeneration following seasonal prescribed fires in oak-dominated shelterwood stands. In the unburned control, there was no difference in the coefficients of determination among the three variables. Conversely, when the stems were top-killed by spring, summer, and winter fires, root collar diameter explained much more of the subsequent height growth than either basal diameter or pre-burn stem height because many small oak stems produced tall, vigorous sprouts. Examination of these sprouts revealed that they had large root systems and shared certain pre-burn characteristics such as number of stems, number of full-sized leaves, and stem height. These findings indicate that foresters need to consider root collar diameter when assessing the size adequacy of oak regeneration in previously disturbed stands and provide guidance of what stem characteristics indicate small oak stems with large root systems.

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