

DEVELOPING A METHOD OF SITE QUALITY EVALUATION FOR *QUERCUS ALBA* AND *LIRIODENDRON TULIPIFERA* IN THE EASTERN KENTUCKY COALFIELDS

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Abstract. Kentucky is currently experiencing a shift in the revegetation of its reclaimed mine sites. Grasses and agronomic crops have been used previously for this purpose; however, reclamation through reforestation is becoming more common due to carbon sequestration, biomass fuel, and bond release issues. Historically, the evaluation of reforestation efforts on mined lands has come from regional site indices (based on 50-year old trees) and assessments of tree height and survival. Unfortunately, these methods fail to grasp the overall quality of the trees or site. With this in mind, a project is currently underway that will develop reference curves based on tree and soil variables measured on a chronosequence of sites for two species of trees: white oak (*Quercus alba*) and yellow poplar (*Liriodendron tulipifera*). For each species, eight even-aged stands will be identified and sampled throughout the Eastern Kentucky Coal Fields according to the following age classes: 5, 10, 20, 40, and 80. A total of 40 stands will be sampled per species. Using regression relationships, we hope to project forward growth curves from the mine sites and compare them to those developed from the reference, or natural, sites to determine if they are on a similar trajectory. This method will not only evaluate tree survival, but will also determine whether or not the stand is comparable to a naturally regenerated stand on non-mined land. The evaluation of reforested mine sites is the catalyst for this study; however, the growth curves will serve an additional function by being a base reference for white oak and yellow poplar systems in Eastern Kentucky. Overall, we hope to develop a method of characterization that may be applied to any species in any region for multiple purposes.

Additional Key Words: site characterization, reforestation, reclamation, white oak, yellow poplar.

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