

Public Abstract

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Title:Modeling the Financial Impact of Management Decisions on Loblolly Pine Production

Located primarily in the southeastern United States, Loblolly pine (*Pinus taeda* L.) is a variety of Southern yellow pine that is often planted by non-industrial private landowners seeking a beneficial long-term investment from their land. More recently, loblolly pine has received considerable attention as a potential species for agroforestry, carbon sequestration, and bio-energy plantations due to its ability to adapt to numerous site locations and its fast growth. Although the Ozark region is outside its native range, loblolly pine has shown potential as a fast growing, highly marketable option for landowners in this region who wish to diversify returns from their land. For landowners, understanding how loblolly pine management decisions impact their financial bottom line is a key to adoption and incorporation into an agroforestry practice. The Loblolly Pine Decision Support Tool (LPDST) model incorporates growth and yield predictions with financial analysis in a simple format targeted to landowners with little forestry background. As a planning tool for landowners who wish to adopt loblolly pine as part of an agroforestry practice, the LPDST provides options for various spacing configurations, as well as options for pine straw harvest. The LPDST accurately predicts average diameter at breast height (dbh) and height within a 99% confidence interval, and quickly reflects the impact of establishment, management, harvesting and marketing decisions on net present value (NPV), annual equivalent value (AEV), internal rate of return (IRR), modified internal rate of return (MIRR), and pay-back period (PBP). This study details the development of the LPDST and the processes for which the model is tested for reliability, accuracy, and sensitivity to decisions regarding establishment, management, harvesting and marketing of loblolly pine.