MISSISSIPPI STATE UNIVERSITY™
FOREST AND WILDLIFE RESEARCH CENTER

INVESTIGATING ALTERNATIVE STATISTICAL DISTRIBUTION MODELS TO EXPLAIN AND PREDICT LUMBER PHYSICAL PROPERTIES

A McIntire-Stennis Supported Project

When working with lumber, engineers and scientists must make sure the math is correct. They commonly use statistical distribution models to estimate the likelihood that lumber will break under stress. If these models are inadequate, one may overestimate or underestimate the probability lumber will fail resulting in wasteful overengineering or possible safety issues.

While research on statistical distributions of mechanical properties of graded lumber are plentiful, this project aims to add new insight by focusing instead on mill-run lumber. Considering data from all qualities of lumber helps stakeholders such as the USDA Forest Products Laboratory and the American Lumber Standards Committee better assess statistical models for lumber strength. The results of this study should better inform decision making when it comes to evaluating the methods and standards for determining lumber design values.

COLLABORATION

Collaborators include the USDA Forest Products Laboratory and the American Lumber Standard Committee.

IMPACTS

With proper long-term protection, **lumber's capacity for storing carbon** far exceeds that of steel and concrete.

Forest products and timber harvesting contributed over **$13.12 billion in revenue output** in Mississippi, nearly 5% of the total output in the state.

Accurately calculated design values **bolster the global competitiveness** of southern pine lumber.

ABOUT MCINTIRE-STENNIS

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

USDA

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