

Endowment Establishes Laboratory for Wood Protection Research



Photos by John B. Goodman

By Andrea Cooper

Wood products contribute \$12.9 million to the Mississippi economy, but weather, insects and other destructive elements destroy one-tenth of the forest products produced in the state each year.

Wood preservatives are used to protect against losses, but there are environmental issues and toxicity problems associated with these products.

An endowment in the Forest and Wildlife Research Center is assisting with the process of developing eco-friendly wood preservatives. Funded by a land gift from Harold C. and Claire Lucas, the endowment has been used to establish the Lucas Laboratory for advanced biodeterioration research. Biodeterioration, the natural processes of microorganism activity in wood, often results in what is commonly referred to as wood decay or rot.

"The vision for the laboratory is to be a leading and recognized force in the development of environmentally friendly methods for understanding and controlling the biodeterioration of wood products," said Darrel Nicholas, codirector and professor in forest products. "The Lucas Laboratory will use a team approach involving other MSU departments, industry, universities and federal labs to develop improved methods for preserving wood."

Harold Lucas worked in the wood-preserving industry for many years. As executive vice president of the American Creosote Company, he became familiar with the work in wood preservation at MSU.

"Through this endowment, scientists have the resources to acquire and advance fundamental and applied

understanding of the complex process of wood biodeterioration," said Susan Diehl, codirector and associate professor of forest products. "The result will be better ways to protect wood products and use the natural processes of deterioration for industrial biomass applications."

The lab will also study the positive side of the forces responsible for wood decay, Diehl added.

"Specific examples are the possible use of microorganisms and their enzymatic systems for biopulping and biobleaching processes, the discovery of unique organisms or microbial processes for biomass conversion to fuel or products, and bio-treatment of contaminated wastewater, air and other forest products industrial emissions," she said.

The lab's educational objectives will be supported by graduate degree programs within the College of Forest Resources. Research will be focused on understanding the microbial decomposition of wood and developing accelerated test methodology for evaluating wood protection systems.

"Biodeterioration is a natural process that plays an important role in the cycling of nutrients in forest situations," Diehl said. "Unfortunately, this natural process also takes place in homes and buildings when wood is used as a building material."

In order to control the process, the researchers at the lab hope to uncover the detailed nature of the microorganism community involved.

"With a better understanding of the colonization and interactions of the diverse microbial community associated with wood decay, we hope to be able to control the process," Diehl said. "Ideally, we would like to be able to stop or slow the process in wood products and speed the process in situations where recycling of nutrients is the goal."