Louisiana Forest Products Development Center

NEWSLETTER

Winter 2004

Director's Message

Richard Vlosky
Director, Louisiana Forest Products Development Center, School of Renewable Natural Resources

Greetings from Baton Rouge. First, all of us at the Louisiana Forest Products Development Center wish you the best for the holidays and a joyous New Year. Since the last issue of the LFPDC newsletter, much has happened in forest-sector development in Louisiana.

In this issue, we share some highlights of our research and publishing efforts. We are pleased to include a number of guest articles from colleagues and partners. One important part of our work is the relationship the LFPDC has with the LSU AgCenter's Experiment Station. In this issue, Dr. David Boethel, vice-chancellor and director of the Louisiana Agricultural Experiment Station, shares his thoughts on this relationship.

The LFPDC continues to enjoy a strong partnership with Louisiana Economic Development, a state cabinet-level agency. Kelsey Short, director of Agriculture, Forest and Food Technology Cluster Development, has an article in this newsletter that is an update on department activities in economic development.

Also in this issue we highlight a newly formed partnership between the LSU AgCenter and Metafore, an

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LFPDC Enhances Economic Development in Louisiana

David Boethel

David J. Boethel

Forestry remains the leading crop in Louisiana, both in sales of timber and pulpwood and value-added income. In fact, among the major agricultural commodities in the state, the forestry industry is the only one in which value-added income exceeds farm-gate value. In the past five years, value-added income to the forestry sector has averaged about 72 percent of the entire income associated with the industry; however, relative to value-added income associated with forestry in other states, Louisiana still has room for improvement.

Because the forest community recognized the need for enhanced value-added technology and outreach, it was instrumental in convincing legislative leaders to establish the Louisiana Forest Products Development Laboratory, which became functional in 1994, as a component of the LSU AgCenter's School of Forestry, Wildlife and Fisheries. During the decade since inception, the faculty members in the unit have demonstrated a firm commitment to fulfill the

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An Integrated Market-based Methodology for Value-added Solid Wood Products Sector Economic Development

Researchers at the LSU AgCenter have developed an innovative approach to stimulating economic development through value-added wood product industry expansion. The methodology, which matches production capabilities to market demand, goes beyond simply examining forest resources, current industry capabilities and market forces. In addition to these important components, the methodology includes analyses of regional economic effects of value-added industry growth, socio-economic and demographic factors, work readiness of the potential employee base, required employee skills and employee training program development. The research approach is flexible and can be adapted for different objectives. This article describes the rationale for wood products value-added sectoral development and describes the methodology.

What are Value-added Wood Products?

Solid wood (as opposed to pulp and paper products) forest products can be broadly characterized as primary or secondary products. This classification is not always clear, but most industry observers agree on general definitions of the groups. Primary products are those produced directly from raw timber input. Examples include chips, lumber, veneer, plywood and their by-products.

Secondary products use primary products as inputs for remanufacturing into semi-finished and finished products. Examples include various types of panels, engineered composites, millwork and hardwood components. Secondary

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An Integrated Market-based Methodology

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products can include final consumer products such as furniture and cabinets. Many industry development efforts, as is the focus of the methodology discussed here, focus on value-added secondary processing rather than primary production.

Value-added Wood Products and Economic Development

In forest-rich regions where jobs are in short supply, locally generated secondary forest products industry jobs may offer a viable alternative to forced migration or the need to commute long distances for employment. Further, secondary forest products wages often exceed average wages of other jobs in rural areas, adding incentives for company recruitment and industry development efforts, and export-oriented value-added forest product companies may also offer rural communities added benefits as exports often increase economic multipliers.

Development planners often target value-added secondary wood processing because this sector often offers increased profitability through higher margins and greater profit. Employment is typically encouraged through establishment of a large number of smaller local companies instead of a few large primary-processing plants. In addition, higher economic multipliers are often realized in secondary manufacturing compared to primary conversion. Making finished products instead of commodities allows a company to take better advantage of new markets and market trends, and secondary products also can earn higher profits by adding value and meeting specific customer needs.

The Methodology

The figure shows the framework of a methodology to promote value-added forest products sector-driven economic development. Concurrent sustainability of resources, industry development, markets and other model components is the overriding foundation of the model and research approach. All components need to move in tandem and in a coordinated fashion for successful forest sector development to occur. Following is a brief description of major model elements.

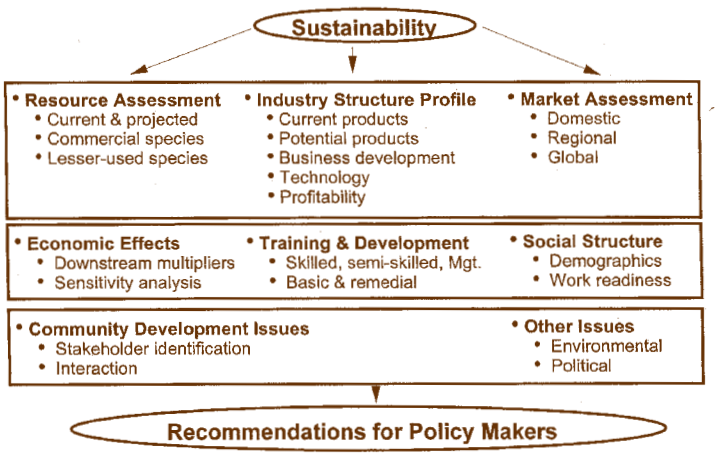
Resource assessment

The initial step in forest sector development is to discern the current and potential availability of raw materials both at the forest resource and intermediate product levels. In this methodology, we examine more than 25 forest resource variables including forest types, current and projected timberland area by county, timberland area by ownership, growing stock volume by species, sawtimber volume by grade, diameter class and species and sawtimber growth/removal ratios by species.

Industry structure profile

Another core component of the methodology is the collection of baseline data on the value-added wood products industry. Elements of an industry analysis are varied and include raw material types and supply status, current and potential products that could be produced, business development plans, technology applications, distribution channels and impediments to growth and development. Is there the presence of sawmills, dry kilns, millwork plants, particleboard, hardwood lumber, etc. that could support significant secondary development?

Integrated Market-Based Value-Added Forest Sector Economic Development



Market assessment

A major factor in determining the probability of industry success is the market structure for current or potential value-added solid wood products. In this part of the methodology, a market analysis is conducted to identify products with a high potential for successful expansion or development. Beyond identifying attractive segments for development at the industry level, we look at corporate-level issues that promote or hinder investment. In addition, an analysis of the competitive environment is conducted. This analysis can identify niche market opportunities as well as areas to avoid because of high levels of competitive pressure.

Economic Impacts

Often, an important impact of overall value-added wood product development is to create new jobs and income sources for rural residents. Economic modeling provides estimates of income and job creation throughout the regional economy inclusive of and beyond the wood products sector. This component of the methodology focuses on estimating the impacts of feasible growth in the value-added forest product industry on the economy of the target region. The expectation is to provide policy-makers with an idea of the sector's possible contribution to total economic activity and to income distribution in the region of interest.

Social Structure and Work Readiness

In any industry development strategy, it is important to examine the social structure of a community where jobs may be created. The social structure of a community allows for an understanding of education constraints, social stratification, economy and the knowledge base that already exists in this community. The decision to locate an industry to a particular location may not be based as much on the quality of the labor pool but on the natural resources within the particular area. Industries new to a region are concerned with the quality of the pool of potential workers. Often, when 'high tech' industries are introduced in a new location, the competence level of the residents is not adequate. In these instances, the industry is forced to look outside the immediate area and community for skilled workers during the early phases of development. Employee quality is affected by the social conditions that exist in the surrounding area.

This component of the research methodology describes the pool of eligible workers for the proposed value-added forest products industry in the target area. In addition, any uniqueness in the social structure or social institutions that exists and any potential problems with workers that could influence the success of the value-added forest products industry are researched.

Using a micro-level approach, labor skill needs of existing companies as well as labor skill needs of companies operating in the forest products industry sector under study are identified. An inventory or profiling of the available labor pool, combined with an examination of industry skill requirements, leads to development of employee training and development programs.

Employee Training and Development

Traditional educational systems often do not provide work force training and development specific to value-added forest products industries. Where secondary industry is to occur, there is a need to focus a sustainable educational effort on upgrading skills for existing employees, developing management programs for owner/managers and developing entry-level training for new industry employees. Such programs would be comprehensive and would draw upon existing expertise and support.

Recommendations for Policy-makers

Although this methodology typically ends where policy-maker implementation starts, the authors recommend that a collaborative structure for value-added forest sector development be established. Research has shown that the most successful value-added wood product industry initiatives have had support from the top levels of government and collaboration and cooperation from a multitude of entities.

Summary

In this article, we lay out a blueprint for sustainable value-added wood product industry development. The methodology incorporates a holistic and flexible approach that emphasizes long-term sustainable industry development. The goal is to develop the wood products industry while adding value to existing resources, creating employment opportunities with transferable skills and maintaining the stewardship of renewable resources. The nature of the methodology is such that during implementation, continued analysis and systematic follow-up can accommodate changes in demand, supply, market conditions, economic conditions, etc. Driven by markets and demand and not production, any new jobs created are likely to be maintained. This approach can assist local policy-makers in formulating strategies for implementation of economic development efforts designed to capitalize on defensible market driven opportunities in forest products industry sectors.

Regardless of the underlying motivation (rural development, adding value, employment enhancement, etc.), the methodology is a planning tool that can help develop sustainable strategies for forest products industry development. Such development can add value to existing resources and create employment opportunities with transferable skills. For success to be achieved, many stakeholders, including local development organizations, industry members, academic institutions and state and local economic development agencies, must be involved to move from baseline analysis to program implementation. For more information, contact Richard Vlosky, Vlosky@lsu.edu.

LFPDC Enhances Economic Development in Louisiana

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mission of providing assistance for the development of value-added processing to enhance economic development, but the scope of the activities has broadened to address forest sector development from the forest to the ultimate consumer. Consequently, both the unit (Louisiana Forest Product Development Center) and its administrative parent (School of Renewable Natural Resources) have undergone name changes to reflect their evolving missions.

The Louisiana Forest Products Development Center (LFPDC) maintains highly active research programs in new product development, wood-based product durability, environmental assessment and improvement, industrial process and improvement, and business and industrial development. A review of the LFPDC newsletters will reveal the faculty have been prolific in publishing the findings of their research, successful in obtaining extramural funding, active in national and international professional organizations, committed to graduate education and training, recipients of awards and honors, and aggressive in forming cooperative ventures with other institutions *(Louisiana Tech University, Mississippi State University)* and agencies *(Louisiana Department of Agriculture and Forestry, Louisiana Department of Economic Development)* as well as entities in the private sector.

The Outreach Action Plan being initiated will enhance the transfer of technology developed by research to stakeholders through collaborations with Community Economic Development and Natural Resources faculty and agents. This initiative along with the Forest Sector Economic Development Web site *(titled Louisiana Forest Products Community)* (www.Laforestproducts.org) undoubtedly will increase the adoption of technology that emerges from research. And, the recent establishment of an advisory board comprised of stakeholders from all segments of the forestry industry will ensure that the research and education programs are relevant and responsive.

The LSU AgCenter constantly assesses its programs to address the most relevant issues facing the state's citizens. In recent years, the AgCenter has restructured to improve coordination of its personnel and programs statewide and has been involved in discussion at various levels in the organization to prioritize programs to identify critical needs, enhance efficiency and address budget constraints. As a result of this process, changes have occurred at the Calhoun Research Station in Ouachita Parish. The fruit and vegetable breeding programs have been transferred to other units *(Pecan Research and Extension Station and Red River Research Station)*, and plans to enhance value-added forestry programs at the Calhoun Research Station are under consideration. The faculty members in LFPDC were called on to develop several initiatives in this area because of the importance of forestry to the region. They were prompt in their response, and during the next few months, the initiatives will be evaluated by the AgCenter administration for possible implementation at the Calhoun Research Station.

As I begin my duties as vice-chancellor and director of the Louisiana Agricultural Experiment Station, I look forward to working with Dr. Rich Vlosky, director, LFPDC, the unit's faculty and staff, Dr. Bob Blackmon, head, School of Renewable Natural Resources, and Dr. Paul Coreil, vice-chancellor and director, Louisiana Cooperative Extension Service, to ensure that the LFPDC continues to serve the forestry industry. I am confident that the LFPDC has developed a vision that will enhance sustainability and profitability of the forest industry and simultaneously advance economic development in Louisiana.

David J. Boethel, Vice-Chancellor and Director
Louisiana Agricultural Experiment Station
LSU AgCenter

News at the Center

Todd F. Shupe

Publications

- So, C.L., B.K. Via, L.H. Groom, L.R. Schimleck, T.F. Shupe, S.S. Kelley, and T.G. Rials. 2004. Near infrared spectroscopy in the forest products industry. Forest Products Journal. 54(3):6-16. (Feature article).
- Catallo, W.J., T.F. Shupe, and R.P. Gambrell. 2004. Hydrothermal treatment of CCA- and penta-treated wood. Wood and Fiber Science. 36(2):152-160.
- Via, B.K. and T.F. Shupe. 2004. Diagnostic analysis of board foot to ton ratio for a small sawmill. Forest Products Journal. 53(11/12):88-94.
- Li, W., T.F. Shupe, and C.Y. Hse. 2004. Leaching of flakeboard produced from recycled CCA-treated wood into deionized water. Forest Products Journal. 54(3):38-41.
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Grants

- Shupe, T.F., W.R. Smith, and R.P. Vlosky. 2004. A regional educational program to increase awareness of wood packaging phytosanitary requirements for international trade. Status: accepted. USDA Forest Service Wood Education and Resource Center and Limestone Bluffs RC&D, Inc. $30,000.
- Shupe, T.F. 2004. Long-term wood decay and rot testing. $5,000. Industry support.
- Shupe, T.F. 2004. Special grant – equipment. LSU AgCenter. $5,810.
- Shupe, T.F. 2004. Wood quality research. Status. USDA Forest Service. $79,321.
- Hse, C.Y., D. Arnold, and T.F. Shupe. 2004. Development of closed loop recycling system for preservative-treated wood – A process for converting spent treated wood into molded products. USDA Forest Service, US DOE Agenda 2020. $67,000.
- Shupe, T.F. 2004. 3-D engineered fiberboard project. USDA Forest Service, Forest Products Laboratory. $65,065.
- Shupe, T.F. 2004. FST preservatives from cedar wood extractives. USDA Forest Service. $10,000.
- W.R. Smith, T.F. Shupe, and Q. Wu. 2004. Termite research. Special Grant, State of Louisiana. $29,000.
- Via, B.K., M. Stine, and T.F. Shupe, C.L. So, and L.H. Groom. 2004. Genetic improvement of fiber length and coarseness based on paper product performance and material variability — A review. International Association of Wood Anatomists Journal. 25(4):401-414.

What's Happening at the LFPDC at Louisiana Tech?

Coming Events

50th Annual Hardwood Log, Lumber and Tree Grading Workshop. To be held at Louisiana Tech University, Ruston, La., March 15-18. Earn 24 CFE credits (Category I). Registration fee $400. For more information, contact Mark Gibson, workshop coordinator, at (318) 257-3392, fax (318) 257-5061 or by e-mail at mgibson@LaTech.edu.

Publications

- Gibson, M.D. 2004. The future of wood utilization. Pages 9-18, In: Proceedings for the Twentieth Annual ARK-LA-TEX Forestry Forum, Shreveport, La., March 11, 2004.

Presentations

- Gibson, M.D. 2004. "The future of wood utilization." Presented at the Twentieth Annual ARK-LA-TEX Forestry Forum, Shreveport, La., March 11, 2004.
- Taylor, Dan S., William B. Patterson, Phil Wright, and Mark D. Gibson. 2004. "Establishing the Stage-Discharge Relationship for Flow-Based Water Quality Sampling of Managed Forest Streamwater." Poster presentation at the College of Applied and Natural Sciences Research Symposium, Louisiana Tech University Student Center, Ruston, La., April 29, 2004.
- Grozdits, G.A. and M.D. Gibson. 2004. "Monitoring drying rates and predicting moisture contents of air-drying lumber." Poster presentation and demonstration at the College of Applied and Natural Sciences Research Symposium, Louisiana Tech University Student Center, Ruston, La., April 29, 2004.
- Grozdits, G.A. and M.D. Gibson. 2004. "Changes in papermaking technologies affect hardwood and softwood resource requirements." Presented June 27, 2004, and abstract printed on Page 8, In: Biographies and Abstracts, Forest Products Society, 58th Annual Meeting, Grand Rapids, Mich., June 27-30, 2004.
- Grozdits, G.A. and K.C. Deminger. 2004. "Day to day management and implementation of new technologies in a British Columbia tree farm license." Presented at the "Wood Scientists from Sopron Alma Mater in the World" Conference in Sopron, Hungary. September 16, 2004.
- Grozdits, G.A. and M.D. Gibson. 2004. "Wood technology in the future—nanotechnology offers new and enhanced opportunities for the use of ligno-cellulosic materials." Presented at the "Wood Scientists from Sopron Alma Mater in the World" Conference in Sopron, Hungary. September 16, 2004.

News

Mark Gibson

- Vice Chairperson. Mid-South Section, Forest Products Society, 2004-2005.
- Secretary. Biology Technical Interest Group, Fundamental Disciplines Division, Forest Products Society, 2004-2005.
- Invited speaker on the topic of Small Log Utilization for "Forestry on the Grow," the 9th Annual Oklahoma Forest Utilization Conference and Equipment Exposition, Western Hills Resort, Sequoyah State Park, Wagoner, Okla. April 27-29, 2004.
- Pulp & Paper Technical Session Moderator. Forest Products Society's 58th Annual Meeting, Grand Rapids, Mich. June 27, 2004.

George Grozdits

- Invited speaker on the topic of Gluing of Wood for "Forestry on the Grow," the 9th Annual Oklahoma Forest Utilization Conference and Equipment Exposition, Western Hills Resort, Sequoyah State Park, Wagoner, Okla. April 27-29, 2004.
- Organized and invited speakers for the Pulp & Paper Technical Session at the Forest Products Society's 58th Annual Meeting in Grand Rapids, Mich. June 27, 2004.
- Speaker at a conference in Hungary in late Sept and early October where he presented two presentations: "Day to Day Management and Implementation of New Technologies in a British Columbia Tree Farm License" and "Wood Technology in the Future—Nano-Technology Offers New and Enhanced Opportunities for the Use of Ligno-Cellulosic Materials." September 16, 2004.

Richard P. Vlosky

Publications

- Vlosky, Richard P. and Todd F. Shupe. 2004. "What Do U.S. Homebuilders Think About Treated Wood?" Forest Products Journal. 54(10):41-48.
- Shook, Steven R., Richard P. Vlosky and Sanna M. Kallioranta. 2004. "Why Did Forest Industry Dot.coms Fail?". Forest Products Journal. 54(10):35-40.
- Reyes, Rudy, Arturo Chávez, Francisco X. Aguilar and Richard Vlosky. 2004. "Diagnóstico y análisis de mercadeo de pequeñas y medianas empresas transformadoras de madera en Siguatepeque y San Pedro Sula, Honduras." Recursos Naturales y Ambiente. Turrialba, Costa Rica. No. 42:86-92.
- Wu, Q., and R. Vlosky. 2004. "New Initiative on Bio-based Industry Development in the United States." In. Proc. the 2004 Council Meeting and Technical Forum of Wood Industry Section, Chinese Forestry Society. Dan Yang, China. October 27-29, 2004. pp 97-110.
- Han, G., Q. Wu, and R. Vlosky. 2004. "Mixed Sugarcane Rind and Hardwood Oriented Strandboard Bonded with Phenol Formaldehyde Resin." In Proc. the 7th Pacific Rim Bio-based Composite Symposium. Nanjing, China. October 31-November 2, 2004. pp 115-125.
- Vlosky, Richard P. and David T. Wilson. 2004. "Technology in the Classroom: Teaching Business Marketing in the Twenty-First Century." Part V: Alternative Technologies. Fundamentals of Business Marketing Education-A Guide for University-Level Faculty and Policymakers. J. David Lichtenthal, Editor. Best Business Books. Hawthorne Press. New York, London, Oxford. ISBN 0-7890-0121-7.
- Xu, Xinwu, Dingguo Zhou, Qinglin Wu, and Richard P. Vlosky. 2004. "Agri-based Composites in China: Opportunities & Challenges." Forest Products Journal Cover Feature. 54(5):8-15.
- Vlosky, Richard, Scott Leavengood, Sanna Kallioranta. 2004. "An Overview of Web-Based Communities." In Proc. Manufacturing Competitiveness of the Forest Products Industry. Sponsored by the Forest Products Society. November 5. New Orleans, La.
- Poku, Kofi and Richard P. Vlosky. 2004. "Exploring Marketing Orientation Influences on Internet Adoption in the U.S. Lumber Industry." Working Paper #67. Louisiana Forest Products Development Center. LSU Agricultural Center. Baton Rouge, La. August 28.
- Kallioranta, Sanna M. and Richard P. Vlosky. 2004. "A Model of Extranet Implementation Success Effects on Business Performance." Working Paper #66. Louisiana Forest Products Development Center. LSU Agricultural Center. Baton Rouge, La. July 14.
- Dunn, Michael A. and Richard P. Vlosky. 2004. "Developing a Cooperative Extension System for Forest Products and Forestry Systems in Honduras." Working Paper #65. Louisiana Forest Products Development Center. LSU Agricultural Center. Baton Rouge, La. June 18.
- Shupe, Todd and Richard Vlosky. 2004. "A Comparison of U.S. Home Builder and New-home Homeowner Perceptions and Concerns About Mold." In Proceedings of: Wood-Frame Durability and Disaster Issues Conference. Forest Products Society. October 4-6. Las Vegas, Nev.
- Vlosky, Richard P. and Kofi Poku. 2004. "A 2002 Update on Internet Use in the U.S. Lumber Industry." Working Paper #63. Louisiana Forest Products Development Center. LSU Agricultural Center. Baton Rouge, La. May 25.
- Vlosky, Richard P. and Todd F. Shupe. 2004. "Is Mold an Issue for Home Builders and Home Owners?" Engineered Wood Journal. Spring 2004. p. 27.

Grants

- Richard Vlosky and Shadia Duery. Developing a Strategic Framework for Certified Tropical Wood Products in the United States; Metafore; $10,000.
- Ramsay Smith, Todd Shupe, Qinglin Wu, Richard Vlosky. Enhancement of Wood-Based Durability Facilities at the Louisiana Forest Products Development Center; Louisiana Board of Regents-Enhancement Program; $105,540.

Qinglin Wu

Publications

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- Lu, J.Z., and Q. Wu. 2004. Surface and interfacial characterization of wood-PVC composites: thermal and dynamic mechanical properties. Wood Fiber Science 36(4):500-510.
- Xu, X., D. Zhou, Q. Wu, and R.P. Vlosky. 2004. Agri-based Composites in China: Opportunities & Challenges. Forest Prod. J. 54(5):8-15.
- Wu, Q., X. Duan, and J.Z. Lu. 2004. Chitosan copper complex as a potential preservative for enhancing biological performance of wood polymer composite. In Proc. the Sun Grant Initiative South Central Region Meeting. Okalahoma City, Okla. June 14-15, 2004. B-4.
- Wu, Q., J.Z. Lu, I.I. Negulescu, and K. Lian. 2004. Coupling efficiency of maleated polyethylene copolymers in wood fiber-polymer composite. In Proc. the 3rd East Asian Polymer Conference, Chengdu, China. June 6-10, 2004. pp 244-245.
- Wu, Q., X. Duan, J.Z. Lu, and K. Lian. 2004. Wood-polymer composites modified by chitosan copper complex with improved biological performance. In Proc. the 3rd East Asian Polymer Conference, Chengdu, China. June 6-10, 2004. pp 420-421.
- Lu, J. Z., Q. Wu, and I. I. Negulescu. 2004. A fundamental study on compounding process for wood fiber-High Density Polyethylene Composites. In Proc. 11th International Conference on Composite Engineering. Hilton-Head Island, South Carolina. August 8-14, 2004.

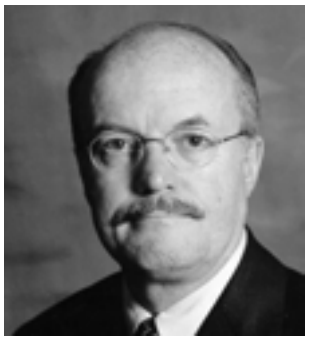
Grants

- Chemical analysis of Southern Pine wood for OSB manufacturing. Roy Martin Lumber Company. Q. Wu. $4,000.
- MDF fiber analysis. Weyerhaeuser Company. Q. Wu. $1,200.
- Economic Feasibility Study of Using Comrind as a Supplemental Raw Material for Structural Composite Manufacturing. American Sugar Cane League and Louisiana Department of Economic Development. Wu, Q, M. E. Salassi, R.P. Vlosky, and B.L. Legendre. $30,000.
- Micro-thermal analyzer (ì-TA) for advanced interfacial characterization in bio-fiber and polymer composites. Louisiana Education Quality Support Fund. Wu, Q. $151,457.

News

- Yiqiang Zhou completed his MS degree in July (Thesis title: Properties of Borate-treated Strandboard Bonded with PMDI Resin).
- Gi Young Yeong and Fu Yu jointed the program as new graduate students working on wood-based composites.
- Dr. Guangping Han returned from China in September and is continuing her work on OSB.

Visit our Web site at:
www.rnr.lsu.edu/lfpdc



Kelsey Short
Director of Agriculture/
Forestry/Food Technology

In recent months, Louisiana Economic Development (LED) has embarked on a multi-pronged marketing campaign to promote business development and expansion in the forest products industry.

The campaign includes direct mailings to targeted companies, print ads in industry publications (see insert), development of the Web site, "Louisiana Forest Products Community" www.laforestproducts.org, and exhibitor booths at trade shows such as the IWF Show in Atlanta. The marketing campaign is beginning to pay dividends. LED is working on six different economic development projects including secondary wood products such as doors and floors. We were also very pleased to participate in the Roy O. Martin expansion project announcement, which encompasses a dry veneer plant at Chopin, La., and an oriented strand board facility at Oakdale, La. The combined investment for both sites is $223.5 million and will employ 595 loggers and manufacturing personnel.

Two important economic development programs that can benefit a forest products manufacturer include the state Quality Jobs Program and Renewal Community, a federal incentive package that covers much of north Louisiana.

Quality Jobs Program

Companies that expand or locate new jobs within the state are eligible for a direct cash rebate of either 5 percent or 6 percent annually on the eligible payroll of the operation for a period of up to 10 years, renewable every five years. Companies must create at least $500,000 of new payroll ($250,000 of new payroll and five new jobs for companies with 50 or fewer employees) within the first three years of operations to qualify for the program. Companies are required to pay either 85 percent of the basic healthcare costs of all employees for individual coverage or 50 percent for family coverage, except for those employees earning $50,000 and above, for which the individual coverage is mandated at 70 percent. A company would be eligible to receive a 5 percent annual rebate on the payroll of those employees whose salaries are 1.75 times federal minimum wage. A 6 percent rebate is granted to companies on the salaries of those employees whose salaries are 2.25 times the federal minimum wage and if your company is in one of the targeted state clusters or if the operation is located in a high poverty census track. Eligible employees must

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Metafore, LSU AgCenter team up in Tropics

Terry Black, Project Manager, Metafore

Understanding the market for secondary processed tropical wood products is the focus of a recently launched research project undertaken by the LSU AgCenter and the forest sustainability non-profit organization Metafore. The project is funded by the United States Agency for International Development (USAID), USDA Forest Service International Programs, Metafore and the LSU AgCenter.

The intent of the research project is to provide responsible producers of finished products made of tropical wood about the opportunities, constraints and characteristics for these products in the U.S. marketplace. Research under the direction of Dr. Richard Vlosky, director of the AgCenter's Louisiana Forest Products Development Center, will focus on survey research, statistical analysis and publishing peer reviewed articles and master's theses. Metafore will provide qualitative evidence through interviews.

Based in Portland, Ore., Metafore seeks out leaders in business, government and all other realms of society who share its vision of business prosperity and forest integrity.

One aspect of Metafore's work builds a bridge between producers of socially and environmentally responsible forest products in developing countries and forest product buyers in North America by facilitating the exchange of market information and intelligence.

The project will survey and interview more than 3,000 importers, distribution intermediaries, secondary manufacturers, homecenter retailers, specialty retail outlets, architects and consumers. The research will focus on four main product segments: 1) millwork and molding (architectural wood millwork), 2) wood doors and wood windows, 3) wood furniture and wood furniture parts and 4) wood flooring and decking.

Metafore is sponsoring an intern from Bolivia, Ana Alicia Eid, who is conducting the interviews for this project as part of her internship. She will collaborate with Shadia Duery, a graduate research assistant from Bolivia working with Dr. Vlosky. The project results will be used to help secondary wood products manufacturers in tropical countries make informed decisions about product lines and capitalize on opportunities presented by both domestic and export markets.

Upon completion of the project, Ms. Eid will organize and present seminars to responsible forest products producers and other stakeholders in nine tropical countries: Costa Rica, Nicaragua, Guatemala, Colombia, Ecuador, Peru, Chile, Bolivia and Brazil. Other communication materials based on the research results will also be developed and distributed worldwide. An article based on Ms. Duery's thesis will be published in the June 2005 edition of the *Forest Products Journal*.

Together, the LSU AgCenter and Metafore will build a foundation of information geared toward reducing trade in illegally harvested wood products and those extracted with no concern for long-term forest sustainability. The project is just one of the efforts of the Sustainable Forest Products Global Alliance (SFPGA), a public-private partnership of business, government and non-governmental organizations working together to encourage the responsible management of forest resources, reduce illegal logging and improve the well-being of local communities. To learn more about the SFPGA, go to http://www.usaid.gov/our_work/environment/forestry/index.html.

More information about Metafore at www.metafore.org

work an average workweek of at least 35 hours. Companies can apply in advance for annual rebates until the total payroll reaches the $500,000 (or $250,000) requirement within the first three years of the new operation. Only the direct payroll of Louisiana residents is used to determine the rebate amount.

Renewal Community Initiative

Much of North and Central Louisiana have been designated Renewal Communities (RC) by the federal government. Areas designated as RCs will receive special fderal income tax treatment and other incentives.

Renewal Community Tax Benefits:

- Wage Credit: Up to $1,500 or 15 percent of an employee's salary up to $10,000 for each employee who lives and works in the renewal community.
- Work Opportunity Credit: Up to $2,400 for employees hired from groups that have high unemployment rates or other special employment needs, including youth ages 18 to 24 who live in the renewal community. Other qualified groups include veterans, ex-felons, food stamp recipients, vocational rehabilitation referrals and summer youth.
- Welfare to Work Credit: Up to $3,500 for the first year and $5,000 for the second year for each new hire of someone on long-term family assistance.
- Increased Section 179 Deduction: Allows businesses to take a deduction of up to $35,000 on equipment purchases. That lets businesses deduct all or part of the equipment cost the year it is purchased instead of deducting the expense over time.
- Commercial Revitalization Deduction: Allows businesses that construct or rehabilitate commercial property to deduct a portion of the costs over a shorter period of time than permitted under standard depreciation rules.
- Environmental Cleanup Cost Deduction: Allows businesses looking for land to deduct cleanup costs of hazardous substances in qualified areas.
- Zero Percent Capital Gains Rate: A business that holds an asset for at least five years does not have to pay taxes on the profit of its sale.

Renewal Community incentives are available from January 1, 2002, to December 31, 2009. The federal tax credits that a business earns through the incentive can usually be carried forward for 20 years or carried back for three years.

More detailed information is available at *www.renewallouisiana.com*.

Properties of Bagasse Fiberboard Studied

The objective of this study was to use agro-based fibers for the medium density fiberboard (MDF) combined with Chinese tallow tree (*Sapium sebiferum*) and bamboo fiber as an alternative of wood-fiber-based composites. The study evaluated adhesive system, composite formulation, moisture content (MC), size effect (aspect ratios; L/D) and panel types on the mechanical and physical properties of agro-based composites to obtain the objective.

The adhesive system was evaluated with composite formulations of both bagasse to tallow tree fiber and bamboo fiber at mixing ratios of 100/0, 75/25, 50/50, 25/75 and 0/100, respectively. Bagasse/tallow tree fiber formulation of 50/50 and 25/75 yielded mechanical and physical properties that were not statistically different from higher proportions of *Sapium* fibers and provided the maximum use of bagasse fibers into the panels. Increased furnish MC from 0 to 8 percent played a significant variable on the panel properties. A combined adhesive system of 1 percent MDI (4,4'-diphenylmethane diisocyanate)/4 percent UF (urea formaldehyde) appeared to be more responsible on the composite properties than 8 percent UF and 2.5 percent MDI. The resin system showed an equal mechanical and physical performance of composite made from 3.5 to 4.5 MDI system.

The effect of fiber sizes and panel types was investigated to improve panel mechanical and physical properties with bagasse/bamboo fiber composites. Five different mesh sizes with 20, 40, 60 and 80 boundaries and image analysis for the fiber aspect ratios (L/D) were quantified and evaluated the influence on the mechanical and physical panel properties. Static bending, tensile strength parallel- and perpendicular-to-the surface increased as fiber aspect ratios (L/D) increased from 3 to 20. Larger particles (11 percent of weight fraction, > 20-mesh) and particles smaller than 80 mesh were responsible for the mechanical property loss of agro-based composites. HB and multi-lay-up MDF (layered with classified particle sizes) appear to be the most promising panel types, based on the compatibility and property enhancement.

This is a cooperative project with the USDA Forest Service, Southern Research Station in Pineville, La. For more information, contact Dr. Todd Shupe at (225) 578-6432 or tshupe@agcenter.lsu.edu.

Sugarcane Residual Material at the Cora Texas Sugarcane Processing Facility in Louisiana

Regents Fund Equipment to Enhance Wood-based Composite Program

Wood/natural fiber composites (biocomposites) are emerging as a viable alternative to glass fiber reinforced composites in various applications.

These composites offer some inherent technical advantages over conventional composites like low cost, light weight, competitive specific mechanical properties, reduced energy consumption and a "green" concept. Among these products, wood fiber-polymer composite development has escalated very rapidly. Production reached more than 1.3 billion pounds in 2003 with products valued at $700 million. This industry is expected to grow by 20 percent through 2005 and by 14 percent to 2010.

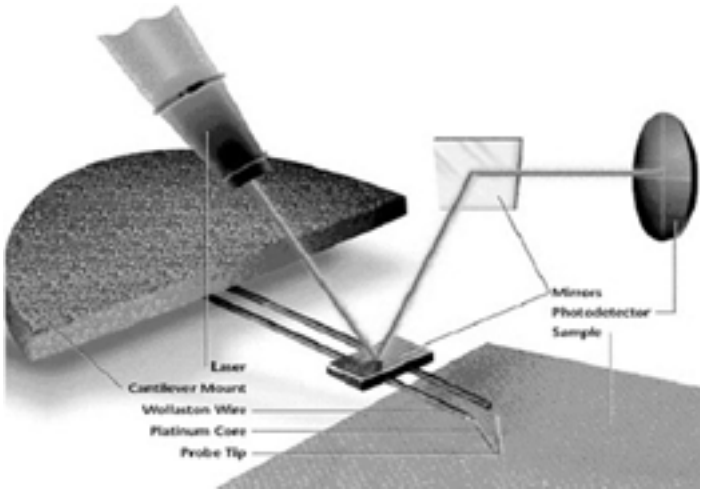

Figure 1. Measuring principle of the Micro-Thermal Analyzer (iTA).

Composite materials rely on the interface to transfer stresses from the matrix to the reinforcing fibers. Thus, the performance of any given composite is critically dependent on the adhesion of the matrix to the reinforcing material (particle, fabric or fiber). The preparation and characterization of the matrix/filler interface are challenging and critical tasks in the fabrication of any composite. Wood fiber surface modification, use of novel coupling agent, matrix modification and novel processing - all play vital roles in designing superior strength wood/natural fiber composites of industrial attractions. Composite interface analysis is becoming increasingly important as new and improved products and methods are developed.

The Louisiana Board of Regents has given a grant of $151,457 to Dr. Qinglin Wu at LFPDC through its equipment enhancement fund. The grant fund will purchase a Micro-thermal analyzer (μTA) for wood-based composite interface analysis. Micro-Thermal Analysis is based on combined high positioning accuracy and imaging capabilities of scanning probe microscopy (atomic force microscope) and localized thermal analysis. A schematic diagram of a ìTA is shown in Figure 1. This consists of a probe connected to an array of peizo transducers that can move it in the x, y and z planes. A laser beam is reflected off the back of the cantilever to fall on a photodetector, which senses the degree to which the probe is bent upward or pulled downward. The probe is first lowered onto the sample until the cantilever bends slightly, thus exerting a force onto the surface. The piezo transducers then move the probe over the surface of the sample, rastering line by line in the x and y directions until an area of, for example, 10 μm^2 has been covered.

While the probe is being scanned over the sample surface, a feedback loop from the photodetector ensures that the degree of bending of the cantilever, and thus the force exerted on the surface, is kept constant. At the tip of the probe the silver is etched away exposing the platinum. When an electrical current is passed through the probe, only the tip heats up. The electrical resistance of the probe is a measure of the temperature at the tip. The outcome is that this probe can serve as a means of carrying out miniature thermal analysis experiments by changing its temperature.

Micro-thermal analysis opens a new dimension in material characterization for composites. Other applications of the μTA include phase separation of the polymer blends, stabilization of carbon fibers and properties of pharmaceutical products, thin films, surface coating of paper and film and waxy coating on plant leaves. Several proposals are in preparation for USDA National Research Initiative Competitive Grant Program, USDA SBIR and NSF to use the technique for establishing toughening mechanisms of the polyolefin/wood flour composites, for analyzing fundamental mechanisms of chemical absorption and fire-retarding performance of treated structural wood composites, and for analyzing fundamental stabilization process of wood-based biocarbon composites.

For more information, please contact Dr. Qinglin Wu at 225-578-8369 or wuqing@lsu.edu.

Natural Resources Symposium Set for July

The old LSU Forestry Symposium has been restarted with a new name and contemporary focus. The theme for the July 19-20 meeting at the Lod Cook Conference Center in Baton Rouge will be Resource Conservation Issues and Opportunities.

The symposium will be a high-level and objective conference featuring prominent speakers from throughout the country addressing resource conservation issues of importance to Louisiana. We are seeking sponsorship from all entities involved in natural resources (state, federal, academic, industry and NGOs). Proceedings will also be produced. Please contact Todd Shupe at (225)578-6432 or tshupe@lsu.edu for more information.

Director's Message

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environmental non-governmental organization based in Portland, Oregon, as well as awards and recognition that our industry and academic colleagues have received.

For more information about the Louisiana Forest Products Development Center, please visit our Web site: http://www.rnr.lsu.edu/lfpdc.

Guide to Raised Floor Systems Now Available

A comprehensive, 48-page guide for building a raised floor foundation system is now available from the Southern Pine Council (SPC).

Raised Floor Systems: Design and Construction Guide offers an in-depth look at the design and many advantages of this type of construction method. The new publication, complete with detailed illustrations, photographs and cost comparisons, also addresses basic construction elements, providing valuable guidance. Together, homeowners, builders, insurance underwriters, architects and other industry professionals can use the guide to examine the benefits of a raised floor system during the planning and building phases of a structure.

The definitive guide covers a wide range of related topics such as moisture control, soils and site preparation, foundation types, termite-resistant framing, design loads, span tables and floor framing. Other topics such as lumber storage at the job site, environmental benefits of raised floors and basic facts about wood products give readers tips that could pay big dividends. Four case studies demonstrate the versatility of raised floor construction for both residential and nonresidential buildings.

For a free single copy of the raised floor guide, contact SFPA and request publication #411.Also available is a six-page companion brochure for consumers, Raised Floor Systems: Product Performance Facts, publication #410. Order online by visiting www.southernpine.com. Direct inquiries to SFPA, Box 641700, Kenner, LA 70064; 504/443-4464; fax 504/443-6612, or e-mail info@southernpine.com.

First Memorial Lecture Features First Grad Student

Dr. Mike Barnes, professor of wood science at Mississippi State University and an LSU alumnus, was the inaugural speaker for the Elvin Choong Memorial Lecture Series held October 22 at the School of Renewable Natural Resources.

Barnes earned both his bachelor's and master's degrees from LSU. He was Dr. Choong's first graduate student.

Choong joined the RNR faculty in 1965 and taught classes on topics from wood science to research problems in forestry until his accidental death in 2001. At that time he was climbing the rugged terrain in La Tigre National Forest in Honduras while working on a USAID project.

First row (from left): Dr. Mike Barnes, Junita Choong Meier and Joni Choong. Second row (from left): Dr. Todd Shupe, Michael Choong and Dr. Bob Blackmon

"Choong was doing what he most loved to do at the time of his untimely death," said wood science professor Dr. Todd Shupe, who developed the lecture series. Shupe was one of Choong's last graduate students.

"Elvin was adored and respected throughout the LSU community and the world because of his scholarship, courtesy and youthful enthusiasm," Shupe said. "His middle name translated from Chinese meant 'sent from heaven.'" Shupe added that Choong was a prolific researcher and great mentor to numerous students. He was internationally recognized as a leader in wood physics.

Barnes has been on the Mississippi State University faculty since 1971 and is a well-known internal expert in wood durability. His presentation, "The Future of Wood Preservation," was well attended and well received by faculty, students and industry personnel.

Barnes was selected as the inaugural speaker based on his LSU ties, his affinity for Dr. Choong and the fact that it was Homecoming. Mike, a former LSU football player, also received the Outstanding Alumnus of the Year award from the School of RNR the next day at its Alumni Annual Meeting.

Shupe initiated the lecture series to pay tribute to Choong by bringing in speakers of international stature to give state-of-the-art presentations on contemporary issues in wood science and tropical forestry – both of which were important to Choong.

Visit our Web site at: www.rnr.lsu.edu/lfpdc

LFPDC Researchers Look at Sugarcane Rind as a Raw Material for Composite Panels

Drs. Qinglin Wu and Rich Vlosky at the LFPDC, along with Dr. Michael E. Salassi, professor, Agricultural Economics and Agribusiness, and Dr. Benjamin L. Legendre, sugarcane specialist, Plant Science Division, all with the LSU AgCenter, are conducting a study, "Economic and Market Feasibility of Using Comrind as a Supplemental Raw Material for Structural Composite Manufacturing."

The objective of this project is to conduct economic and market feasibility studies for using comrind as a supplemental raw material for structural composite manufacturing in Louisiana. Structural wood-based composites such as oriented strandboard (OSB) are gaining increased use in both residential and commercial applications. It has been widely used as sheathing, flooring and I-joist materials in construction. With continuing production growth and decreasing wood supply, the cost of wood fibers used to manufacture OSB has more than doubled in the past 20 years. Thus, development of alternative material for replacing wood fibers for OSB production is of great practical significance.

Comrind, a byproduct of sugarcane processing, has significant potential as a raw material for structural panel production. In addition to OSB, other products that can be manufactured with comrind include laminated strand lumber (LSL) and parallel strand lumber (LSL). Comrind can be extracted at a commercial production scale using proven separation processes and equipment. Comrind has better or comparable properties compared with wood flakes including tensile strength, linear expansion and thickness swelling, and internal bond strength.

This project was funded by the American Sugar Cane League and the Louisiana Department of Economic Development.

Project Components

1. Assessment of comrind production and potential raw material supply available for oriented strandboard (OSB), laminated strand lumber (LSL) and parallel strand lumber (PSL) production.
2. Assessment of current and projected raw material requirements for OSB, LSL and PSL production.
3. Assessment of willingness to use and pay for comrind as a raw material substitute by current procedures of OSB, LSL and PSL.
4. Economic analysis of comrind raw material production, material handling and logistics.
5. Development of a commercial system proposal for using comrind as a raw material in the production of OSB, LSL and PSL.

Benefits to the Louisiana Sugar Industry

It is important for the sugar industry in Louisiana to find new ways to use its manufacturing residue, both for the public welfare as well as to cut costs in

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Elder Wood Honored at Lantern Awards Ceremony

Joe Elder Jr. and Mike Smith of Elder Wood Preserving Co., Inc., of Mansura were presented the 2004 Lantern Award for Forest Products by Governor Kathleen Babineaux Blanco and Louisiana Economic Development (LED). Elder Wood Preserving operates a facility that treats Southern Yellow Pine lumber and plywood.

The awards were presented May 27 in the Governor's Mansion. The Louisiana Industrial Development Executives Association (LIDEA) co-sponsored the event. Lantern Award winners were chosen based on company success, as well as contributions to the economy of the entire community and the quality of life for all Louisianans. Elder Wood is the only company in all industrial areas to have received the Lantern Award more than once. This is the second such award for the company.

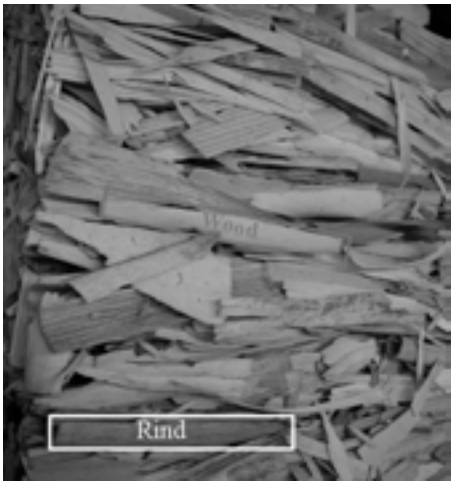
Elder Wood was nominated for this award by Dr. Todd Shupe, associate professor, School of Renewable Natural Resources, who lauded Elder Wood for its continuing commitment to worker safety, local and global environmental issues, youth and community involvement at the same time they are developing new overseas markets, installing new dry kilns, and increasing sales and improving product quality. Joe Elder is also a member of the Advisory Board for the Louisiana Forest Products Development Center.

Elder Wood Preserving Co., Inc., winner of the 2004 Forest Products Lantern Award, was honored at a ceremony at the Governor's Mansion. Pictured are (left to right): Governor Kathleen Babineaux Blanco; Don Hutchinson, secretary of Louisiana Economic Development (LED); Joe Elder Jr., Elder Wood president & CEO; Mike Smith of Elder Wood; and Kelsey Short, director of Agriculture/Forestry/Food Technology, LED.

storing and handling. It is desirable to have a method to transform the usable bagasse fiber into beneficial end products. Development of production technology for incorporating comrind into structural composites panel production for building construction is a practical way to solve the problem. Funding for this project can help bring the process into commercial production.

Both sugar and forest industries play a significant role in stabilizing rural economics and maximizing economics contribution of the natural resources in Louisiana. This work will help sustain a strong sugar industry by helping companies transform their manufacturing residues into value-added products while meeting society's environmental standards. This can create additional employment opportunities and increase the value of Louisiana's forest and agricultural resources.

For more information on this project, contact Dr. Qinglin Wu at (225) 578-8369 or e-mail him at Qwu@agcenter.lsu.edu.



Sugarcane Waste (bagasse)


Mixed Hardwoods and Comrind OSB Bonded with 4.5% PF Resin

Research Needed on Wood Durability for Residential Structures

W. Ramsay Smith

The Louisiana environment is a natural disaster for wood. Unless protected, wood is naturally degraded by combinations of heat, moisture, insects, decay, mold and other forces such as hurricanes and floods. All of these are common to Louisiana and the southern states in general.

The most common destructive element is the Formosan subterranean termite (*Coptotermes Formosanus*), which is thought to have been introduced at the end of the WWII by ships returning from the Pacific Rim. From their docking positions in major ports and waterways, they discarded wood crating and dunnage infested with this termite. Formosan subterranean termites were therefore established in structures in the port cities and surrounding areas, including swamps and forests. They continuously gained strength and increased numbers by remaining unnoticed until 1966 (Spink, 1967). Now recognized as the most destructive insect in Louisiana, this pest costs an estimated $500 million per year to homeowners in structure damage, repair and treatment. About $350 million of that is in New Orleans alone (Hunter, 2000).


W. Ramsay Smith

Even though most notable, this is not the only major problem facing homeowners in Louisiana. Our high humidity and heat also provide a fertile atmosphere for growth of decay and mold inside walls and attics. This has become more common because of the tighter structures being constructed, which do not allow moisture to escape after it collects unseen within walls. Common sources of moisture are damp crawl spaces, faulty plumbing, leaky roofs, shower or bath steam, improperly vented stoves and clothes dryers, backed-up drains and flooding.

Decay is probably the most destructive biological pathogen in wood structures in the United States. Within the last five years, huge losses have been caused by improper installation of exterior insulation finishing systems (EIFS). An estimated 215,000 homes have been built in this country using this technique. The exact amount lost to this process is unknown, but is in the billions of dollars – and this is only one system.

Presence of moisture also promotes the growth of mold, which has been of recent concern. Even though mold has not been linked directly to health effects scientifically (Zauner, 2001), it is thought to cause illnesses in people sensitive to toxic gases (mycotoxines). These include infants, children, the elderly, people with low immune systems, pregnant women and those with respiratory conditions such as allergies, asthma and hay fever. The biggest concern has been the Stachybotrys attar. Costs and lawsuits resulting from mold growth increase daily, with homes having to be decontaminated and torn down.

Increasing the severity of the problem is the removal from the market the most common wood preservative used in the United States and throughout the world. CCA (chromated copper arsenate) has an almost 70-year track record of effective use against termites and decay. After discussions with the Environmental Protection Agency, CCA manufacturers have volunteered to remove this product from the residential market because of public concern over the use of arsenic. Other preservatives are available; however, most either cost more or do not have the same resistance to leaching as CCA when in soil contact.

The Louisiana homeowner is therefore left venerable to conditions that can lead to degradation of wood structural components whether caused by shoddy construction, long-term negligence of proper maintenance or flooding. Regardless of the reason, homeowners and builders are concerned and are beginning to increase their demand for and use of wood substitutes. Some substitutes are reasonable, but the increased use of wood substitutes is a double blow to Louisiana's economy and environment.

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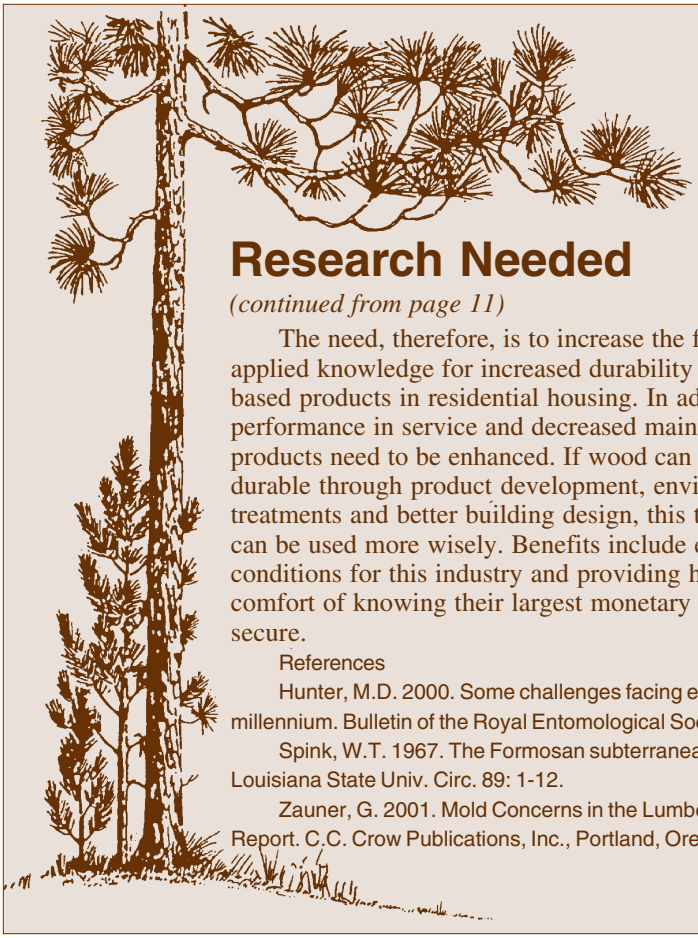

Research Needed

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The need, therefore, is to increase the fundamental and applied knowledge for increased durability of wood and wood-based products in residential housing. In addition, increased performance in service and decreased maintenance of all wood products need to be enhanced. If wood can be made more durable through product development, environmentally safe treatments and better building design, this tremendous resource can be used more wisely. Benefits include enhanced economic conditions for this industry and providing homeowners the comfort of knowing their largest monetary investment is more secure.

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