Center Focus

Fall 2011
Published by the Center for Forest Products Business
An Alfred P. Sloan Affiliated Industry Center

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Director's Message

Center members and friends:

It is starting to cool off, the students are taking all the parking spots, and the Hokies won their first football games of the season. Therefore, it must be fall in Blacksburg and classes are in full swing. We had an earthquake and hurricane hit the state within one week, which many believe has something to do with our proximity to Washington, D.C. The old Chinese saying, *"May you live in interesting times,"* is considered both a blessing and a curse. One thing is for certain, these are interesting times.

I wrote in our center annual report that if we listen to the media long enough, we should either hide in a cave or jump off a cliff. However, working with students on campus is refreshing, and they provide hope for our future. In my sales courses, I teach a section on staying positive, and here is a fact that I share during my presentations. Statistics (those numbers we make up to give creditability to what we are about to say) indicate that the average child smiles or laughs 300 times a day before the age of five. The average adult smiles less than 30 times a day. Why the disparity? I believe that children don't read the news and are not impacted by those around them as much as adults. I personally think this reduction in enjoyment is something we should be extremely concerned about. Of all the indicators of successful leadership, having and showing a positive attitude is one of the highest ranked traits (yes, more statistics).

Our industry has changed dramatically in the last four years, with production off by 30 percent or more in most sectors. Yet many firms are expanding operations and new firms are coming into the business. We work in a dynamic, changing, and valuable sector of our economy. Wood is used more than any other resource in the world, and we will continue to utilize more wood in the future. In other words, we are almost guaranteed a market for our efforts. Our job at the center is to train young adults and your employees to be able to compete in this changing landscape. We do this through teaching our students the latest business practices, providing short courses to bring this information to your employees, and conducting research to better understand our markets and business management practices.

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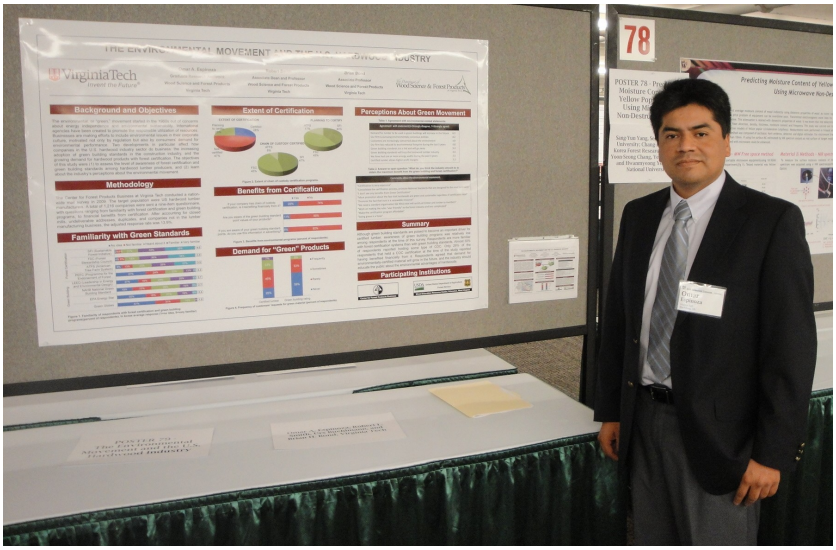
Director's Message (cont.)

One final note. For the past three years, Omar Espinoza was our center communications manager. He worked on his master's and doctorate under the leadership of Brian Bond in the area of lumber drying and energy use in the sawmill industry. Omar recently took a position as an assistant professor and chair of the Forest Products Management Development Institute at the University of Minnesota. We wish Omar and his family the very best in their new endeavors, and we will continue to work with him in his new role.



We have updated our webpage, which has a new web address (www.cfpb.vt.edu). Thank you for your continued support of our center. If you have any questions, please contact me at rsmith4@vt.edu or 540-231-7679.

Bob Smith

Forest products business news

- The USDA announced that the Softwood Lumber Research, Promotion, Consumer Education and Industry Information Order will assess domestic manufacturers and importers that ship more than 15 million board feet of softwood lumber annually, effective January 2012. The money earned from the assessments will be used to help fund research and marketing of softwood lumber in the United States. *Targeted News Service*

- Standard Structures Inc., a leader in glulam beams manufacturing and other engineered wood products, announced it will reduce its products mix to only glulam beams due to the recent recession. *Business Wire*

- The demand for pallets in the United States is expected to increase 6.1% per year to 1.3 billion pallets in 2015. Between 2005 and 2010, the demand for pallets fell in the United States by 4.5% annually because of lack of shipments. *M2 Presswire*

- Shortages of raw material and high prices caused Ipe consumers to look elsewhere for a low cost and high quality alternative, resulting in increased sales for Cumaru. Cumaru costs close to 40% less than Ipe and only has slight differences in strength and hardness. *PR Newswire*

- Crawford Furniture, a Western New York based furniture manufacturer, is fighting to stay open after closing its manufacturing plant in mid August. One retail store is temporally closed, however, a few others remain open. *McClatchy-Tribune Regional News*

- The Softwood Lumber Agreement between the United States and Canada, which expires in October 2013, has initiated the process of granting a two year extension. The committee involved in the extension wants to prevent any renegotiating of the agreement that may complicate the process. *Inside U.S. Trade*

- Allard Research and Development, a leader in ethanol fuel production, publicized the world's first self-powered, modular ethanol refinery using cellulose feedstock to power hydroponic shipping containers. Feedstock waste is minimized and is used completely in the refining process. *India Energy News*

- Blackthorne Partners LLC recently formed Pallet USA; this company plans to purchase approximately 120 pallet companies in Wisconsin and neighboring states. The company plans to refurbish and resell pallets. *The Milwaukee Journal Sentinel*

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Published by
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Center for Forest
Products Business

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VT/0023/0801/1.7M/220696

Forest Products Business News has been designed for educational and engagement purposes only. The intention is to report news that affects various business segments of the forest products industry. Any comments or questions should be referred to: swlyon@vt.edu

Center Focus

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PROFILING OF THE U.S. WOOD PALLET SUPPLY CHAIN

Scarlett Sanchez, Graduate Research Assistant
Henry Quesada-Pineda, Assistant Professor

International trade has grown greatly in the last decade, mostly due to developments like the fall of barriers to international trade, deregulation, and improvements in information technology. Pallets play an important role in the movement of goods from place to place and reduce handling costs. Pallets facilitate transportation of raw and in-process materials or finished products from the supplier to the manufacturer, from the manufacturer to the wholesaler, and then to the retailer.

Each year, 1.9 billion pallets are used in the United States. Wood is by far the most common material used to make pallets; 90% to 95% of all pallets used in the United States are made from wood (Rupert, 2009). Wood pallet manufacturers use a variety of wood species to produce pallets and these materials come from recently sawn logs or recycled pallets. Recycled pallets are increasing in importance because recycling reduces costs and is a more environmentally friendly practice. For that reason, a profile of the U.S. wood pallet supply chain was conducted using a survey instrument to increase the understanding of the U.S. wood pallet industry and its supply chain.

Study Results

Response Rate

A mail survey was conducted to collect data from U.S. wood pallet manufacturers. Fifteen hundred questionnaires were sent nationwide to wood pallet manufacturers. Two hundred forty nine questionnaires were returned but only two hundred and two were completed and considered usable for further analysis (13.5% response rate).

Type of Business

Figure 1 shows that 93% of firms who responded to the questionnaire were manufacturers of new wood pallets, followed by 45%, which corresponded to a pallet recycler or repairer. Pallet broker, lumber broker and pallet material importer accounted for 8%, 5%, and 3% of respondents respectively. "Other" type of business accounted for 11%, this group included activities such as dunnage, mulch, pallet parts, wood crates, specialty boxes, survey stakes, cut stocks, grade lumber or run their own sawmill. Respondents may be involved in multiple business activities.

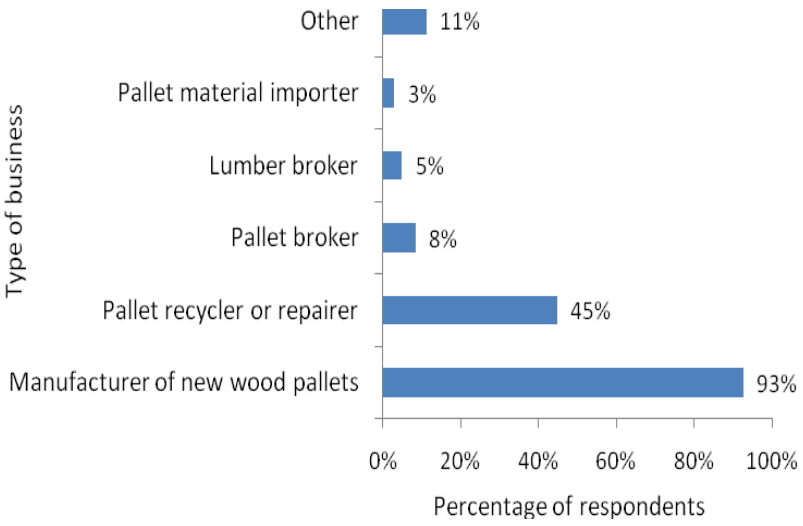

Figure 1. Distribution of respondent by type of business

PROFILING OF THE U.S. WOOD PALLET SUPPLY CHAIN (cont.)

Number of employees

The highest frequency (38.6% of respondents) corresponded to companies with 20 to 99 employees. Seventy eight companies indicated that they had from 20 to 99 employees, representing 38.6% of the respondents. Companies that worked with 19 or fewer full-time employees represent 54.0% of the respondents. Only 7.4% indicated that they worked with more than 99 employees. Comparing these figures to the Census Bureau's (2010), the highest frequency corresponded to the smallest range of number of employees per establishment (1 to 4) followed by 20 to 99 employees per establishment. As the non-response bias assessment demonstrated, smaller companies were less likely to respond to this survey than larger companies.

Major products

Companies were asked to report their major products in 2009. Approximately 70% of companies reported new wood pallet production as their primary activity, followed by recycled/repaired wood pallets with approximately 18%. Nevertheless, there were many companies who were dedicated to other business activities such as lumber, wood pallet parts, railroad ties, wood containers, and other types of production (Figure 2). According to respondents, "other" activities included production of dunnage (wood packaging material to secure a commodity), survey stakes, firewood, mulch, sawdust, chip, bark, plywood, and specialty wood packaging. Also services such as pallet disposal and heat treatment were identified in the research.

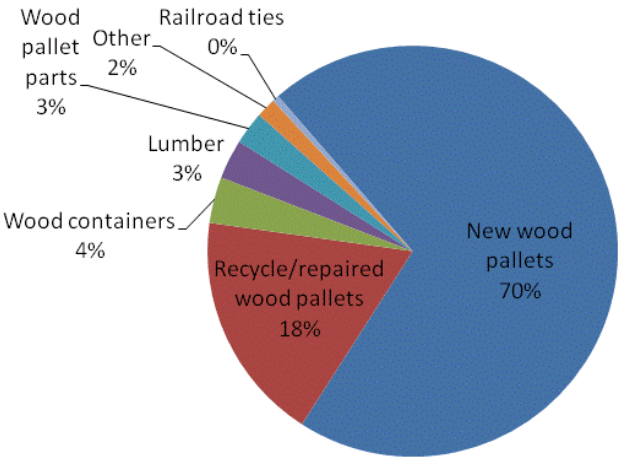

Figure 2. Companies' major products

Pallet production

Thirty five percent of companies made less than 100,001 wood pallets in 2009. A little over a fifth of respondents (21.3%) produced between 100,001 and 1,000,000 wood pallets in 2009. Thirteen percent of companies produced more than 1,000,000 wood pallets. The average pallet production per year per company was 727,229 units*, approximately 42% more than the amount that Bush and Araman (2008) indicated in their 2008 report, which was 512,533 units for 2006. The difference can have two potential explanations: larger companies were more likely to respond to this survey and that there was an increase in production from 2006 to 2009.

* Results from the response bias assessment showed that there was a tendency of bigger firms to return questionnaires.

PROFILING OF THE U.S. WOOD PALLET SUPPLY CHAIN (cont.)

Species and origin of raw materials

Mixed hardwoods had the highest percentage in the mix (27.3%), followed by oak and southern pine, with around 16% each; spruce-pine-fir followed with 12.7%. "Other" species included aspen, larch, ponderosa pine, black ash, lodgepole pine, cottonwood and cedar (see Figure 3). Some respondents selected multiple species or declined to answer the question.

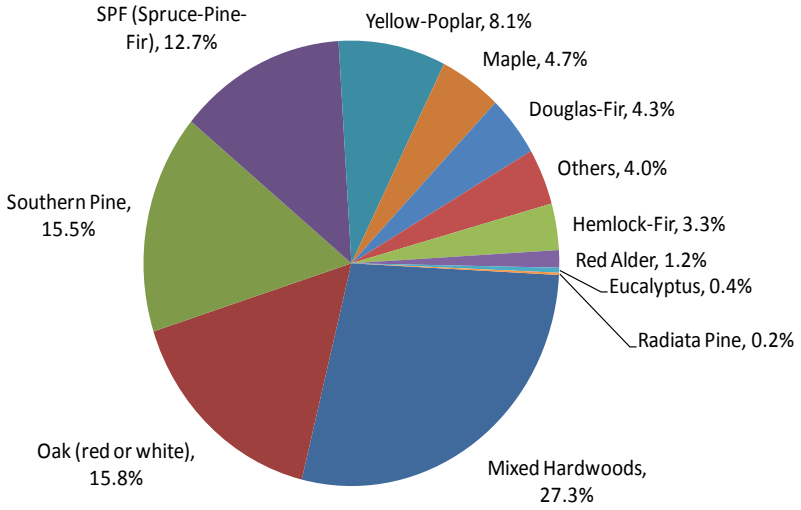

Figure 3. Wood species type used to manufacture wood pallet materials

Purchasing decision

Companies were asked about factors that they consider important at the moment of purchasing raw materials. Respondents indicated that "availability, cost, reliable supplier, quality, and deliver on time" were the most important, followed by "strength and workmanship" factors. Answers show small variability (standard deviation equals to 1) for all factors. Somewhat surprisingly, environmental certification received the lowest rating (3.1), considering that this topic is gaining momentum in the wood products industry (Espinoza and Bond, 2010). Also, a relatively low rating was given to species, stiffness, mechanical properties, and density. This is probably because pallet producers only purchase certain species that already provide the mechanical properties needed for their product.

PROFILING OF THE U.S. WOOD PALLET SUPPLY CHAIN (cont.)

Summary

- Approximately 93% of respondent firms were manufacturers of new wood pallets and about 45% corresponded to a pallet recycler or repairer. Respondents may be involved in multiple business activities.
- Most respondent companies (36.8%) had between 20 to 99 employees and 19.8% had from 10 to 19.
- Approximately 70% of companies reported new wood pallet production as their primary activity and 18% reported the production of recycled/repaired wood pallets.
- On average, the total annual output of pallet units was of 727,229, and median of 200,000.
- The most common wood species used were "mixed hardwoods" with 27.3% followed by oak, southern pine, and spruce-pine-fir (15.8%, 15.5%, and 12.7%, respectively). Respondents reported importing at least some of their raw materials, with an overwhelming majority importing from Canada. Spruce-pine-fir and Douglas fir are the most common imported materials. Chile and Brazil were the most cited among sources of imported materials other than Canada.
- On the supply side, the most important factors for purchasing decisions are availability, cost, supplier reliability, quality, punctuality, strength, and workmanship; all with ratings 4 or higher.

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This research project is funded by the Center for Unit Load Design at Virginia Tech.

Conference: 3rd International Scientific Conference on Hardwood Processing (ISCHP^{3}11).

Blacksburg, Va. October 16-18, 2011. ISCHP^{3}11 will bring industry professionals, scientists, association representatives, government employees, suppliers, and customers together to share knowledge, ideas, and to network. The conference will cover hardwood related issues from the source to the customer, discuss recent developments, and show paths into the future. ISCHP^{3}11 will have a special focus on sustainability and certification. For more information, contact Urs Buehlmann at (540) 231-9759 or email ischp2011@gmail.com

Workshop: Why Lean Safety?

Durham, N.C. October 26-27, 2011. 2-day Workshop on Lean Safety. Outcomes: Understand how lean and safety are interrelated, improve safety outcomes, manage safety more effectively and efficiently, access to lean community. For more information, please contact Mathais Schmitt at (540) 443-6688 or info@vtlean.org

2011 Innovation Based Manufacturing Workshop

Blacksburg, Va. November 8, 2011. The workshop will expose participants to the need for innovation in manufacturing and how current developments in policy, economic development, and open innovation relate to practice of innovation in manufacturing. For more information, contact Henry Quesada at (540) 231-0978 or email quesada@vt.edu

Wood Enterprise Institute Open House

Please Join the Wood Enterprise Institute (WEI) for their Open House on Tuesday, November 15 at 3-5 pm in the Brooks Center Innovation and Design Laboratory. The WEI team will share their business plan, learning experiences, and unveil this year's product offering during the Open House event.

Latest Graduates from the Center for Forest Products Business — Spring and Summer 2011

Chao Wang, M.S., Forest Products. Thesis title: An Application of Lean Thinking to the Furniture Engineering Process

L. Scarlett Sanchez, M.S., Forest Products. Thesis title: Identifying Success Factors in the Wood Pallet Supply Chain

Scott W. Lyon, M.S., Forest Products. Thesis title: Breaking down barriers: Opportunities for Appalachian forest products in Central America