



Oregon Wood Innovation Center

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COMING OWIC EVENTS:

- April 26-27, 2007: [Selling Forest Products](#)
- May 24-25, 2007: [Architectural Design with Wood](#)
- Spring 2007: [Wood Adhesion Short Course](#)

INSIDE THIS ISSUE:

- [Green building systems](#) 2
- [Do you know where your wood comes from?](#) 2
- [Ask the expert](#) 3
- [Lean thinking](#) 4
- [Featured researcher](#) 4
- [Selling forest products](#) 4
- [Subscription Information](#) 5

Western Juniper Update – Part 2

Scott Leavengood
OWIC Director
Scott.Leavengood@oregonstate.edu

In last month's newsletter, we talked about juniper utilization and some of the related challenges. This month, we continue that discussion by describing some of the work that has been done and remaining hurdles to the development of a viable juniper industry.

Western juniper research has covered the gamut from woodland ecology, to harvesting, and even distillation and testing of essential oils. Such research includes:

Harvesting – as mentioned last month, harvesting juniper has been a significant hurdle due to the fact that the trees are highly tapered with numerous large limbs and juniper woodlands have few trees per acre. Several studies have been conducted to examine the costs of various harvest methods. Also, log grading rules have been developed as well to provide guidance on characteristics to separate 'fiber logs' from sawlogs.

Primary manufacturing—research has been conducted on log storage, debarking, lumber yield, and kiln drying. Proprietary lumber grading

rules have been published to distinguish premium lumber from cutstock and rustic grades.

Wood properties—one of the first questions people usually ask about a non-traditional wood species is "how does it compare to commercial species?" Juniper has been examined for a number of properties including:

- Dr. Ed Burke at the University of Montana has examined juniper's strength properties, as well as its unique ability to be bent without splitting into intricate shapes.
- Dr. Jeff Morrell at OSU has explored decay resistance of juniper and other species as fence posts.
- The US Forest Products Lab reported on juniper's basic fiber and chemical properties and Dr. Joe Karchesy at OSU has conducted research on the yields and biocidal properties of juniper essential oils.

Secondary manufacturing—numerous products have been developed from juniper including furniture (both contemporary as well as rustic), flooring, paneling, doors, gift items, and more.

Composite products—Researchers at OSU produced hardboard from juniper chips as far back as the early

1950's. The US Forest Products Lab produced particle-board and wood-plastic composites from western juniper fiber in the 1990's.

Where are we today?

Many value-added manufacturers have demonstrated interest in developing juniper product lines. However, these firms require a steady supply of kiln-dried lumber. High harvest costs and lack of sawmilling infrastructure in eastern Oregon continue to stymie the development of a viable juniper industry.

The latest surge in interest is related to biomass utilization. Juniper 'fiber logs' may be chipped on-site and used for producing heat and electricity (cogeneration). This is, of course, not a new concept – perhaps the highest volume use of juniper ever in the Pacific Northwest was in power plants in northern California in the 1970's-80's. Many of these facilities switched over to natural gas in the 1990's. It remains to be seen if the plants switch back to using wood for fuels and/ or if new facilities are developed.

We encourage readers to visit the [juniper website](http://juniper.oregonstate.edu) (<http://juniper.oregonstate.edu>) for detailed information on any of the topics described above.

Green Building Systems: Comparing Two Systems

Chris Knowles
Program Assistant, OWIC
Chris.knowles@oregonstate.edu

In recent years, there has been increasing interest in buildings that reduce environmental impact, both during construction and during the life of the building, as well as making buildings healthier for occupants. This proliferation of interest has resulted in the development of several green building systems in the United States. The [Wood Promotion Network](#) has a fact sheet that compares the two most commonly used national systems, LEED and Green Globes.

The fact sheet titled "[Wood and Green Building: LEED® VS. GREEN GLOBES™](#)" is available for download on the Wood Promotion Network's website at [http://](http://www.beconstructive.com/)

www.beconstructive.com/ and presents a brief outline of the similarities and differences between the two systems. Additionally, the systems are compared on several key issues including Life Cycle Assessment, renewability, forest certification and locally produced materials.

The Wood Promotion Network has a number of other fact sheets that address the issue of green building and wood including the following titles:

- "[Wood and Green Building: Homebuilder Guidelines](#)"
- "[Wood and Green Building: Life Cycle Assessment \(LCA\)](#)"
- "[Wood and Green Building: Climate Change](#)"

All fact sheets are available on the Wood Promotion Network's website.

A more in depth comparison of the LEED and Green Globes systems is available for download from the [Forest Products Development Management Institute](#) at the University of Minnesota. This report, titled "[Green Building Rating Systems: A Comparison of the LEED and Green Globes Systems in the US](#)" is available at: <http://fpmdi.cfans.umn.edu/Projects/greenbuildingratings/index.php>.

Do You Know Where Your Wood Comes From?

Chris Knowles
Program Assistant, OWIC
Chris.knowles@oregonstate.edu

A recent article in the Chicago Tribune, "[China feeds U.S. demand for wood as forests suffer](#)", outlines some of the environmental and social impacts of some wood products manufactured in China. This article sheds some light on what is a very complex issue of global trade. On a global scale, the US is the largest user and importer of wood products, receiving a significant percentage of our wood products from China.

While the article focuses on the impact of Chinese manufacturers sourcing logs from Papua New Guinea, China sources logs from many other countries including Russia, Malaysia, Indonesia, Burma,

and Gabon. A 2004 Wood Markets report from R.E. Taylor and Associates reports that 85% of China's log imports originate from non-sustainable and/or illegal sources, verifying the concerns the article raises.

This article, while generally factually correct, focuses solely on the negative impacts of China and global timber trade. Further discussion that presents a more balanced point of view of the Chinese forest products industry and its impact on the United States and other regions of the World is warranted. Therefore, a series of articles on the subject will appear in future issues of the OWIC newsletter including articles focusing on:

1. Overview of US—China forest products trade

2. Positive implications of trade with the Chinese forest products industry
3. Negative implications of trade with the Chinese forest products industry

For more information on logging and its impacts on the forests of Papua New Guinea, Forest Trends has a three-volume report titled "[Logging, Legality and Livelihoods in Papua New Guinea: Synthesis of Official Assessments of the Large-Scale Logging Industry](#)" available at <http://www.forest-trends.org/documents/png/index.php> and a joint report by the Environmental Investigation Agency and Telepak titled "[The Last frontier: Illegal Logging in Papua and China's Massive Timber Theft](#)" is available at <http://www.eia-international.org/cgi/reports/reports.cgi?t=template&a=93>.

Ask the Expert



Have questions related to wood? The faculty of the Wood Science and Engineering Department at OSU have the expertise to handle almost any question about wood. Simply submit your question using the [Ask the Expert form](http://owic.oregonstate.edu/askexpert.php) (<http://owic.oregonstate.edu/askexpert.php>). Please be as specific as possible.

The following are examples of recent 'Ask the Expert' questions:

Question:

During a recent wind storm several mature ponderosa pine trees got blown down on our property. Most of them are about 2.5' to 3.5' at the butt and are fairly straight. Before I contract with a local logger, I'd like to find a way to estimate the value of the trees so I can negotiate a fair price.

Answer:

The value of the logs will vary depending on volume, grade (or diameter - depends on the local markets), access (i.e., difficulty getting logs from where they are onto a log truck), and haul distance. The first step would be to determine the volume of timber in the trees. Gross volume is based on small-end diameter and length. Next step is to determine log grade - based on external indications of rot, sweep (crookedness), knot size, growth rate, and other features. The grade rules dictate how much volume to deduct to arrive at net volume. Then of course, there will be the logger's cost to process (remove limbs, cut to length), skid to the roadside, load on a log truck, and haul to a mill.

Not knowing if your local markets are based on grade or diameter, it will be hard to even guess at net volume. Logging costs could be a significant challenge in simply finding a contrac-

tor. A logging contractor would likely need to haul in equipment (at least a skidder and self-loading log truck, I assume) and the cost of doing so typically only pencils out when there are multiple truckloads involved.

You can use the spreadsheet at <http://owic.oregonstate.edu/logvalue.xls> (adapted from work by Steve Bowers at OSU), to estimate gross volume and log value. The first tab ('Volumes') provides the board foot volume based on diameter and length. The other tab on the worksheet shows log value given stumpage prices. For example, if you learn that the mills are paying \$500/ MBF for 22"+ pine logs and that the logger would charge \$200/MBF for their work, the stumpage would be \$300.

Question:

I have a project scheduled to start and the engineer has specified Douglas Fir-Larch Select Structural Lumber, sizes 4 x 10 and 4 x 12 be KDAT to less than 19%. This lumber is to be used in an outdoor, western Alaska coastal environment, 12" above the ground. It will be transported via ocean barge to the site. I am concerned about checking, warping, and other defects possible as a result of drying this lumber to <19%. The potential vendors have each raised these concerns and are recommending 23-25%. Can you give me some guidance please?

Answer:

Two types of checking may occur. Small checks are likely to occur, especially in denser areas (the latewood, also called summerwood). These should go in only a growth ring or two and are minimized with the kiln schedule. Of greater concern to you is probably large checks that are clearly visible and run for several feet down

the face or edge of the board. These are very difficult to avoid if the member comes from near the pith (center of the tree) of the tree or contains the pith. Careful drying might help, but expect significant splitting unless the pith is excluded. Further, if the beams are sawn free-of-heart-center and properly restrained during drying, warp should be minimized as well. Of course, this will be a more expensive member.

One important point is to have a clear understanding between the buyer and seller on how the moisture content is measured. 19% average is much different than 19% at the center, which is much different than 19% measured an inch from the surface. With beams this size, I'm not sure you're going to see much difference between 19% (assuming that's the target) and 23-25%. In looking at the equilibrium moisture content of wood in coastal Alaska (see <http://owic.oregonstate.edu/pubs/emc.pdf>) it seems the range is around 12-20% annually. Thus, wood dried to 23-25% would lose moisture once placed in-service, and would cycle annually between these extremes. Such annual cycling may also lead to checking.

In short, I don't know if it's going to make much that much difference in appearance if they are dried to 19% or 25%. Realize however that as they dry out in-service, further checking may also occur. Before changing the moisture specification, be sure to go back to the structural engineer and have the change approved. In some cases, such as bolted connections, the design values are very different for green versus dry lumber. At <19% the members are S-DRY, if they are above 19% they are stamped S-GRN.

Lean Thinking in the Secondary Wood Products Industry

Chris Knowles
Program Assistant, OWIC
Chris.knowles@oregonstate.edu

Due to growing global competition, especially in the last decade, the U.S. wood and wood-based industries have suffered significant market share losses. The wood industry in Germany has been facing similar challenges. To stay competitive in an increasingly global marketplace, many wood manufacturers have been adopting new management/manufacturing approaches. Lean Manufacturing is a widely accepted and adopted approach

across industries. Lean thinking captures the holistic management approach behind the lean manufacturing terminology. The ultimate goal of a lean organization is to create a smooth, high quality organization that is able to produce finished products at the rate of customer demand in the quality looked-for with slight or no waste.

The latest research brief of the Forest Business Solutions group at Oregon State University summarizes the findings of a study conducted in the Department of Wood Science and Engineering. The study ex-

plored cases of lean implementation in the U.S. and German secondary wood products industries. Two “lean leader” companies from each country were studied to identify the successes and challenges to lean implementation. The research brief is available at: <http://www.cof.orst.edu/cof/fp/faculty/hansen/OSU%20FBS%20Research%20Brief%20Lean%20Thinking%205.1.07.pdf>

Another, more extensive article on the topic of lean thinking will be published by OWIC soon.

Featured Researcher: Scott Leavengood



Scott Leavengood began as director of OWIC in December of 2005. Prior to this, he worked for OSU as a Wood Products Extension Agent. His focus has been on providing technical assistance and training in wood technology and quality control, assisting entrepreneurs with non-traditional species like western juniper, and fostering ‘market connections’ within Oregon’s diverse forest industry.

In his role with OWIC, Scott is responsible for coordinating outreach to wood products

manufacturers from OSU’s College of Forestry. Such work involves responding to requests for information and technical assistance, assisting entrepreneurs with new product/ process ideas, developing systems for maintaining communication between OSU and the wood products industry, and developing and offering educational materials and workshops.

Scott’s focus is primarily outreach and technical assistance, however he also gets involved in applied research. His particular interest is in quality manage-

ment systems; he is planning a research project to explore the “quality-innovation connection.”

With the premise that quality is now ‘necessary but insufficient’ for competitiveness, how can companies adapt their existing quality management systems to lead to enhanced innovation performance? This research will involve a survey of west coast forest products firms followed by in-depth case studies of several firms.

Want to Learn About Selling Forest Products?

Chris Knowles
Program Assistant, OWIC
Chris.knowles@oregonstate.edu

Personal selling is the primary tool used in marketing most forest products. Yet, very few individuals in the industry have professional sales training when starting their career. Those attending this short course will learn the basics of personal selling,

methods of identifying new customers, and will analyze their personal selling profile. The course is designed to improve the efficiency and effectiveness of sales personnel. It is intended for new sales and market-

ing personnel or those wishing to improve their selling skills in the forest products industry.

More information on the course is available at: <http://oregonstate.edu/conferences/sellingforestproducts/index.html>

To subscribe to this newsletter send an email to **Chris Knowles** with “subscribe to newsletter” in the subject line.

Contact us:
Oregon Wood Innovation Center

<http://owic.oregonstate.edu>

119 Richardson Hall

Corvallis, OR 97331-5751

Fax: 541-737-3385

Scott Leavengood, OWIC Director

Scott.Leavengood@oregonstate.edu

Phone: 541-737-4212

Chris Knowles, Program Assistant

Chris.Knowles@oregonstate.edu

Phone: 541-737-1438

Previous issues of the OWIC newsletter are available at:

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