Oregon Wood Innovation Center

Connecting people, ideas, resources

COMING OWIC EVENTS:

- **May 24-25, 2007:** Architectural Design with Wood
- **Spring 2007:** Wood Adhesion Short Course

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Forest Products Trade Between US and China

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In the last decade, China has grown to be a major force in the global export market of forest products, with exports tripling in volume and quadrupling in value from 1997 (12.7 m^3, $3.6 billion) to 2004 (36.2 m^3, $13.1 billion). The U.S. is the largest export market for China's forest products, representing 27.7% of volume in 2004. Japan, Hong Kong, and the EU are other major markets for Chinese exports. Behind Canada, China is the second largest supplier of wood products to the U.S., with a trade surplus in wood products of $7.4 billion in 2006.

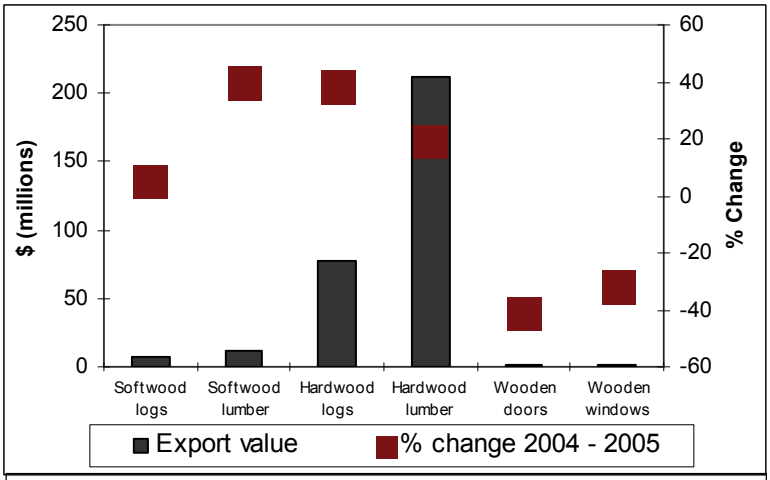

Figure 1. U.S. exports of forest products to China in 2005 by value and % change from 2004 to 2005.

China is also a major importer of forest products. In 2004, China imported $5.2 billion in forest products, excluding pulp and paper. The U.S. is a significant exporter to China (Figure 1). Hardwood logs and lumber account for the vast majority of U.S. exports to China. Since China does not have adequate domestic log supply, growth in exports is tied directly to growth in imports. For example, imports of softwood logs increased by nearly 10 times from 1998 to 2002, with the bulk of imports coming from Russia. Chinese imports of softwood logs and lumber and hardwood logs and lumber increased from 2004—2005, while imports of doors and windows decreased significantly. However, log supply is an increasing concern as Russia has recently announced tariffs on log exports (expected to reach 80% by 2009) in an attempt to move towards increased domestic production. While China has the largest area of tree plantations in the world, these planta-

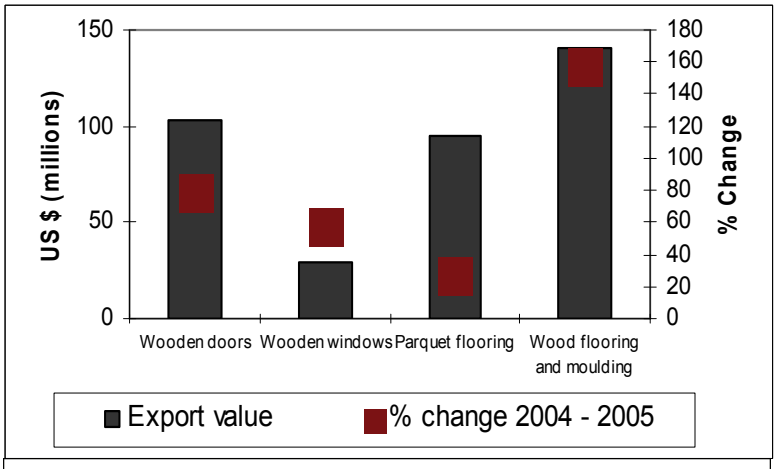

Figure 2. China's exports of forest products to U.S. in 2005 by value and %

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What's all the buzz about biomass?

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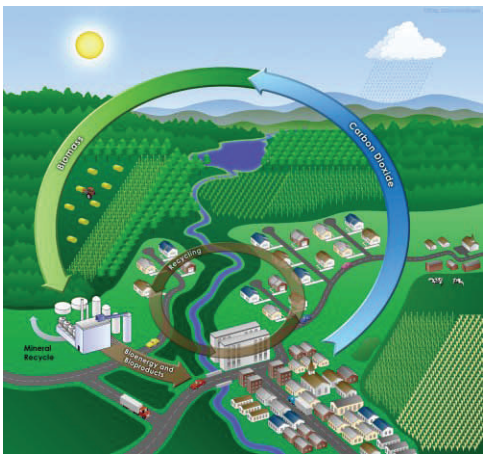
Biomass, bioenergy, biofuels, biorefineries, bio-based products – seems like everything nowadays has a 'bio' prefix. So what's all the buzz about biomass?

Three apparently unrelated needs - renewable energy, economic development, and forest health - have come together to result in the dramatic interest in biomass utilization. Depending on which need you emphasize, the definition of biomass, perception of barriers, and 'solutions' will vary. However, issues related to federal land management (and the resulting uncertainty about biomass supply) and needs for cost-effective harvesting and transportation systems transcend all three views. Aspects that are emphasized in each viewpoint include:

Renewable energy – For this viewpoint, the primary goal is reducing fossil fuel use via increased production of bioenergy/ biofuels (for example, cogeneration or cellulosic ethanol). Thus, biomass is seen primarily as non-merchantable timber, logging residues and perhaps urban wood waste. To impact fossil fuel use, scale and/ or number of facilities must be large; thus large volumes of biomass are required. Energy policy is at the forefront in this perspective and technology needs are related to cellulosic ethanol conversion processes.



Economic development – Here the primary goal is creation of local jobs via utilization of local raw materials. Small diameter timber utilization is the top priority which of course influences how biomass is defined as well. Scale must be suited to local biomass supply. Gaps in local infrastructure - timber harvesting as well as processing – are a key barrier and technology is needed to develop value-added products and markets from small timber.

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U.S. China Trade

Cont. from Pg. 1

tions are young and will not be available for harvest for a number of years. The Chinese government has set goals to utilize these plantations to meet domestic demand by the year 2015. However, several international doubt the feasibility of this goal.

While the U.S. is a significant exporter of forest products to China, we still have negative forest products trade balance with the country. One reason for this negative trade balance is that we largely export low-value products to China in the form of logs and lumber (Figure 1), while the products we import from China are value added and finished products in the form of doors, windows, flooring and furniture (Figure 2). U.S. imports of wood doors, wood windows, parquet flooring and wood flooring and windows all increased significantly from 2004-2005. Wood flooring and moulding showed the most significant increase from $80.4 million in 2004 to $140.9 million in 2005. Chinese furniture manufacturers have become major players in the global industry with total production reaching $25 billion in 2003. Furniture exports have also steadily grown over the last decade increasing at an annual rate of 33% from 1997 to 2003.

Evolution of China's economy is resulting in changes that will mean slower growth in exports of wood products. For example, increasing labor costs, in combination with anti-dumping duties placed on bedroom furniture by the U.S., is shifting some furniture production to lower cost countries such as Viet Nam. The Chinese government has also announced policies with a focus on reducing wood consumption through four key strategies: increased productivity, recycling, conservation, and substitute materials. In addition, a growing middle class in China is increasing domestic demand. This middle class also represents a potential market for value-added, and more importantly, branded U.S. forest products. It is difficult to predict the long-term effects of these changes on trade between the U.S. and China.

Biomass Buzz

Cont from Pg. 2

Forest restoration – The primary goals are improving forest health in general and reducing wildfire hazard in particular. Public perceptions and acceptance of fuels reduction treatment on public lands is a key challenge. Biomass is defined broadly as simply whatever will be removed from forests in fuels reduction treatments. With respect to scale, there appears to be consensus that large-scale efforts are needed. Key needs are related to the science underlying forest restoration and public perceptions of forest management.

So where should we focus our efforts? Well, it's easier to suggest where it appears we are focusing efforts. At this point, it seems renewable energy is leading the charge. Several Oregon wood products firms have invested in new or upgraded biomass-fired boilers for heat and/or power generation. It is also likely that investments will be made in cellulosic ethanol research and perhaps pilot plants as well. We'll keep you posted via this newsletter and our website about future developments. We welcome your comments and questions as well.

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. Please be as specific as possible.

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

Question: Do you have a list of softwood kilns in Oregon?

Answer: I can't say I've ever seen a list of kilns. The Forest Service did a report called Kiln drying lumber in the United States: A survey of volume, species, kiln capacity, equipment, and procedures, 1992-1993. This probably doesn't get to what you're looking for though.

Are you wanting to know where you can get custom lumber drying done? You can find that in the Oregon Forest Industry Directory under Advanced Search then choose Drying under Services.

If you're more interested in simply knowing which mills have dry kilns, we could probably back our way into it using the directory. That is, search for firms that produce pine, hem fir, or alder lumber. Chances are, those mills will have dry kilns.

Question: I live on the coast, and have a problem with mold on the north side of our house. Every year I spray with a Jomax/chlorine, solution, brush the surface and rinse with a power washer. I then have to reapply stain to my redwood siding. What is the best way to deal with this condition, and do you have recommendations about what products are most effective for dealing with it, including stains that might inhibit/prevent mold growth? Thanks for your help.

Answer: Are you sure what you're seeing is mold? Redwood is also known to experience extractive bleed and iron stain. Extractives give highly-colored woods like redwood their color, however they can leach with changes in moisture content, migrate to the surface, and thus discolor light-colored finishes. The extractives would be similar in color to the wood - i.e., reddish for redwood.

Iron stain is common in woods such as redwood and cedar that contain a lot of tannin. The stain is usually black and often occurs around nail heads. However, if you're using a wire brush to clean the siding, the metal from the brush can also cause iron stain on the wood. Iron stain from a wire brush would look black and blotchy - much like mold.

If the discoloration is due to mold, a stain that also contained a mildewcide might do the trick.

The US Forest Products Lab in Madison, WI is a good source for information on finishing, including how to address the different sources of stain (mold vs. iron stain vs. extractive bleed). See for example:

- Solid-Color Stains on Western Redcedar and Redwood Siding
- Water Repellents and Water-Repellent Preservatives for wood
- Paint, Stain, Varnish, or Preservative? It's Your Choice

Featured Researcher: Barbara Lachenbruch

This month's featured researcher is Dr. Barbara Lachenbruch. Dr. Lachenbruch is a professor in the Wood Science and Engineering Department and has been at OSU for 14 years. Her research focuses on wood anatomy and quality with specific interest in the following areas:

- Functional and ecologic wood anatomy
- Wood structure/function relationships for trees and wood products
- Wood quality in relation to silviculture, environment and genetics
- Tradeoffs among mechanics, hydraulics, and other xylem functions
- Effects of rapid growth on wood, tree allometry, and physiology
- Biological function of growth strains
- Juvenile/mature wood changes in softwoods and hardwoods
- Determinants of sapwood quantity
- Differences in growth in plantations vs. natural stands

Dr. Lachebruch's research program aims to increase the predictive capabilities of how growth conditions affect wood structure, growth form, and function of woody plants. Her research aids wood technologists by giving more information about the resource they are or will be using, aids silviculturists by showing effects of their practices on quality and value, aids tree breeders by indicating which traits are interconnected with physiology and in what manner, and aids ecosystem ecologists in devising functional species groups for traits such as decay rate, water use efficiency, and susceptibility to predation by humans.

Dr. Lachenbruch currently has three graduate students and a postdoc working in the following areas:

- how plant anatomy, and hydraulic architecture influence the growth patterns of both closely and distantly related woody species
- wind-tree interactions
- leaf anatomical properties and their role in regulation of stomatal function; and compensatory adjustments in response to growth stresses
- using ratios of such characteristics as leaf specific hydraulic conductivity, conduit diameter, sap velocity, and conduit number to assess hydraulic efficiency

Dr. Lachenbruch teaches two classes—Wood Fiber and Anatomy and Wood, Forests, and Civilization.

More information about Dr. Lachenbruch can be found at http://woodscience.oregonstate.edu/faculty/gartner/index.htm.

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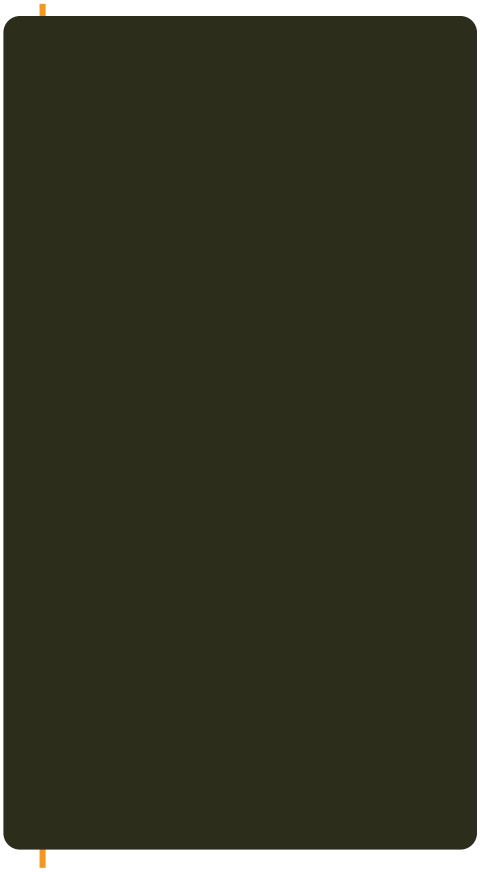

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Previous issues of the OWIC newsletter are available at:
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