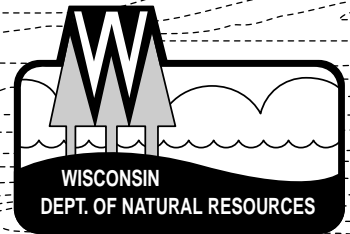


WISCONSIN WOOD

MARKETING BULLETIN



A newsletter published twice per year by the Wisconsin Department of Natural Resources

Fall 2016

Industry Outreach Efforts

Training Needs and Effectiveness of Educational Programs

-Scott Lyon, Forest Products Services Specialist

Educational needs of the forest products industry were assessed during a 2012 study conducted by the University of Minnesota and Virginia Tech (Espinoza et al. 2012). This study examined educational needs of forest products companies in Minnesota and Virginia using an online survey.

About one third of those contacted completed the survey (36% response rate in Minnesota, nearly 33% in Virginia). Company demographics between the two states were slightly different -more secondary manufacturers responded to the survey in Minnesota whereas more primary manufacturers responded in Virginia. The survey asked the respondents about the importance of 31 educational training categories. The top training needs (identified in order of importance) by respondents were: quality and process control, process improvement, marketing, sales, motivating personnel, and total quality management.

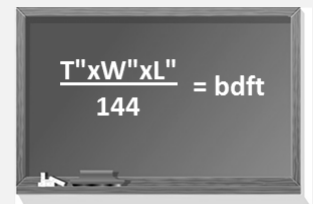
An additional question asked respondents to specify the functional area that presented the most important training need. Manufacturing, marketing, and sales were the top areas in both states. In addition, Minnesota firms reported a greater need for business management training than in Virginia. Respondents were also allowed to provide additional training needs not mentioned in the questionnaire. Some companies responded that they would prefer training in the following areas: kiln drying, maintenance, social media marketing, product development, human resource management, and lumber grading.

It should be noted that company size likely influenced how companies rated the training categories. The researchers found that medium and larger companies (> 25 employees) typically had more educational needs than smaller firms (≤ 25 employees); that said, small companies feel they may not need training.

For more information please refer to the article, "Educational Needs of the Forest Products Industry in Minnesota and Virginia in 2012," published in the Forest Products Journal. 62(7/8): 613-622.

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What's this?

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Forest Products Theme at the 2016 Wisconsin State Fair

-Forest Products Services Team

The Wisconsin Department of Natural Resource's Division of Forestry's indoor exhibit at the 2016 Wisconsin State Fair highlighted the importance of forest products in our daily lives including: the variety and number of jobs in the forestry sector, the many wood building materials and furnishings used in our homes and businesses, the myriad of paper products and chemicals we depend on, and new forest products on the horizon.



Figure 1: Solid wood products display

Specific sections of the state fair exhibit provided information on paper products, wood building materials (Figure 1), and food and chemicals that are derived from trees. More obscure products that contain some portion of trees or manufacturing by-products were also displayed.

Visitors may not have realized that some food products contain carboxymethyl, wood cellulose used as a food thickener and texturizer in products such as ketchup and ice cream, or that miscellaneous products such as soap, perfume, nail polish, toothpaste, and medicines include tree extractives as an ingredient-as displayed in Figure 2.

Another popular display (Figure 3) depicted the distribution of the primary and secondary manufacturers by county in Wisconsin for fair-goers. Here visitors learned that forests are an economic powerhouse, contributing \$24.7 billion annually to the state's economy and that forestry is among the top ten employers in 26 Wisconsin counties. In addition to being the top paper producer in the nation, information on Wisconsin ranking as the #1 state in furniture manufacturing in terms of employment was an interesting fact among many others displayed at the fair.



Figure 2: Chemicals and paper products



Figure 3: Map and economic information

The last section of the exhibit highlighted the bright future of forest products as researchers continue to find new ways to use trees and advances in forest product manufacturing. An example of innovative research is the emerging field of nanotechnology. Nanocellulose materials are strong, lightweight, colorless, and biodegradable. Future uses may include lightweight armor, ballistic glass, car body panels, computer cases, food storage, and flexible electronics. Other products, such as concrete and structural panels, can be strengthened with the addition of nanocellulose.

Industry Headlines

Record high sales of Eastern White Pine

The Northeastern Lumber Manufacturers Association (NeLMA) announced that the first half of 2016 set record sales for [Eastern White Pine](#) lumber from NeLMA mills. Mills shipped over 220 million board feet of white pine lumber during the period.

5,000 square foot homes on the rise

According to the US Census Bureau, a recent [survey](#) found that new homes of 5,000 square feet or more have been increasing since 2012. In 2006, 45,000 new homes started were 5,000 square feet or larger setting the record high.

A new combined heat and power plant installed in WI

The U.S. Department of Energy along with Menominee Tribal Enterprises in Neopit, Wisconsin installed a new biomass combined heat and power [system](#) (CHP). The official opening of the plant took place on April 20, 2016.

August housing report

The housing [market](#) in August 2016 was declined slightly when compared to August 2015. Single family starts decreased 6% month to month and were down 1.2% on a year to year basis. (Dept. of Sustainable Biomaterials, Virginia Tech October 2016).

Wood heating to increase this winter

The U.S. Energy Information Administration (EIA) [predicts](#) the cost of natural gas, heating oil, electricity, and propane will increase leading more households to use wood as a primary heating source. According to EIA, the number of households using firewood or wood pellets has increased by 26% since 2005.

Tests provide good results for Cross Laminated Timbers in fires

Framework Project, LLC [stated](#), that they conducted two fire-rated tests on Cross-Laminated Timber (CLT) used with Glue-Laminated Timber (Glulam) as a building material. Tests suggest that these products meet fire codes and can be used safely in high-rise construction.

USDA announces grant opportunity to expand wood products and wood energy markets

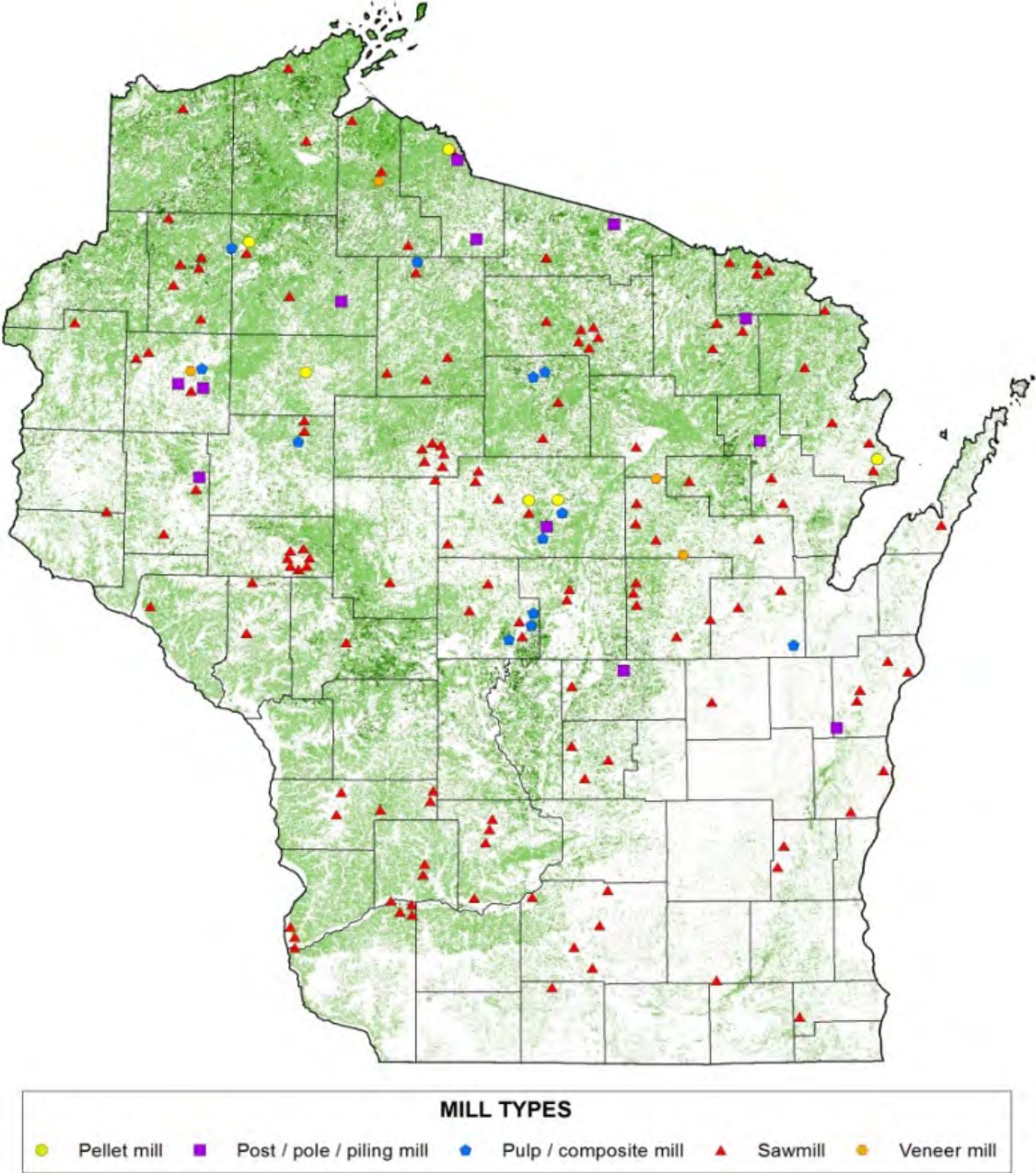
The U.S. Forest Service's Wood Innovations Program is now accepting proposals for projects designed to expand wood energy and wood products markets that support sustainable forest management on the National Forest System and other forest lands. The deadline to apply is Jan. 23, 2017. For more information and to apply, please visit the [Wood Education and Resource Center website](#).

Nanotechnology is moving forward in California

The USDA Forest Service is working with local government officials in [California](#) to evaluate the feasibility of constructing a commercial-scale cellulose nanomaterial production facility. Cellulose nanomaterials are very small particles derived from wood or other sources of cellulose that are used for their commercial properties.

Wisconsin's Primary Forest Products Mills

The map below represents the spatial locations of Wisconsin's primary forest products industries. The term primary in this case means the initial breakdown of a log into a product and includes mills such as sawmill, veneer, pulp, pellet, and post and pole companies. The map was developed by using mill data collected during the Forest Service's Timber Product Output Survey from 2013 and National Pulpwood Consumption Data from 2010.



Map created by Laura J. Lorentz, Urban Forestry Partnership & Policy Specialist, Division of Forestry, Wisconsin Department of Natural Resources, 2016.

Biochar Markets for Wood Residues

-Sabina Dhungana, Forest Products Services Specialist

Primary and secondary wood products manufacturers produce large quantities of wood residues in the form of wood chips, sawdust, shavings, and bark. These by-products, also called mill residues, are commonly sold as raw material for the manufacture of paper, engineered wood panels, landscaping applications (e.g. bark mulch) and as fuel for combustion boilers (e.g. hog fuel). In the past and present, the pulp and composite panel industry along with mulch producers have had a stable demand for residues. However, residue demand by bioenergy markets has softened largely due to historically low fossil fuel prices and a series of mild winter weather conditions throughout the United States. As a result, finding alternative markets for low-value underutilized wood products generated from mill processes and forest management activities are becoming a larger concern.

Understanding and exploring the applications, product technologies, and markets for a new wood product could be beneficial for resolving some of the immediate wood residue utilization problems. One such market is biochar. Biochar is a solid material obtained from thermochemical conversion of biomass in an oxygen-limited environment. Current markets for biochar are diverse, and range from its use as a soil amendment in composting, commercial agriculture and home gardening, to stormwater/wastewater filtration and environmental remediation. Research is now confirming benefits of biochar as a soil amendment that include: reduced leaching of nitrogen into ground water, possible reduced emissions of nitrous oxide, increased cation-exchange capacity resulting in improved soil fertility, moderating of soil acidity, increased water retention, and increased numbers of beneficial soil microbes.

Because of its many potential applications, there is a lot of potential for biochar in wood product markets. Biochar can be a value-added product for existing wood products manufacturing companies because product diversification is the key for a successful business. Biochar plants can also be one stand-alone industry in areas where wood waste and low quality wood materials management is an issue.

Biochar production systems are generally classified as either pyrolysis or gasification systems. Pyrolysis systems



Wood Biochar

use retorts or other specialized equipment to burn the biomass at high temperatures while excluding oxygen. The chamber is vented to allow pyrolysis gases (often called “syngas”) to escape. The vented gases are collected and then combusted to produce a repeated, self-sustaining process.

The two types of pyrolysis systems in use today are fast and slow pyrolysis. Fast pyrolysis tends to produce more oils and liquids while slow pyrolysis produces more syngas. Either system can be used to produce biochar materials using wood. Gasification systems produce smaller quantities of biochar in a directly-heated reaction vessel with introduced air. The more oxygen a production unit can exclude, the more biochar it can produce.

According to a 2013 Biochar industry report (International Biochar Initiative, 2014) there were 175 commercial biochar enterprises in the United States. Among these, close to half are involved in biochar equipment manufacturing, one-third in biochar production or sales and, the remainder are involved in related enterprises. The number rose from 175 in 2013 to 200 in a 2014 report. Companies listed in the database are from all over the nation.

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(continued on page 7)

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Wilson, Kelpie. "Biochar: A rediscovered forest product generates a new industry" Society of American Foresters, Volume 58, Number 3, Page 8 Western Forester June/July/August, 2013. Available at http://nwbiochar.org/sites/default/files/sites/default/files/attached/westernforester_june_july_aug2013.pdf

International Biochar Initiative for information on biochar research, technologies, markets. Available at <http://www.biochar-international.org/>

Training Calendar:

Lake States Lumber Association Annual Winter Meeting

When: January 11 - 13, 2017

Where: Green Bay, WI

Registration: TBD check website: <http://lsla.com/>

Great Lakes Timber Professional Association Spring Celebration

When: April 10, 2017

Where: Radisson Hotel & Conference Center
2040 Airport Dr, Green Bay, WI 54313

Registration: TBD check website: <https://gltpa.org>

Wisconsin Local-Use Dimension Lumber Grading Short Course

When: February 28, 2017

Where: DNR Service Center in Rhinelander
107 Sutliff Ave Rhinelander, WI

Cost: FREE

Registration: Send an email with your full name, mailing address, and phone number to Tammy.Sykes@wisconsin.gov. Questions about the course can be directed to Collin Buntrock at Collin.Buntrock@wisconsin.gov. More information about the course can be found by clicking [here](#).

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***During vacancy please contact the Statewide Forest Products Specialist for assistance.**

What's this? (from page 1)



Answer: It is useful to know how to calculate the number of board feet in a given amount of lumber. This equation allows us to do just that if we know the following measurements: Thickness (T) in inches, Width (W) in inches, and the Length (L) in inches.

Example: Therefore, suppose we have a piece of lumber that is 7 inches wide, 10 feet in length, and 2 inches thick. How many board feet of wood are contained in this piece?

From the equation and our information, we know:

$$\text{Board Feet} = \frac{2 \text{ in} \times 7 \text{ in} \times (10 \text{ ft} \times 12 \text{ in/ft})}{144 \text{ in}^3}$$

$$\text{Board Feet} = 11.67$$

Note: 144 in^3 in the denominator of the above equation is derived from a standard board foot measure: 1" thick x 12" wide x 12" long = 144 in^3

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