



MISSOURI TIMBER PRICE TRENDS

July-Sept., 2012, Vol. 22 No. 3

Missouri Department of Conservation, Forestry Division

North/ Southwest Stumpage Prices- (Prices and volume reported in Doyle MBF scale)

	High	Low	Average	\$/Board foot	Last Qtr	Last Yr.	Vol.	# of Rpts.
Veneer								
Walnut, Black	\$3,100	\$1,200	\$2,455	\$2.45	\$2,415	-	48	12
Sawlogs								
Hickory	\$220	\$50	\$85	\$.09	-	-	35	5
Mixed Hardwoods	\$220	\$40	\$85	\$.09	\$80	\$95	1,070	18
Oak (mixed species)	\$280	\$30	\$140	\$.14	\$145	\$120	659	9
Post Oak	\$160	\$60	\$70	\$.07	-	-	15	3
Red oak (group)	\$600	\$35	\$100	\$.10	\$85	\$95	1,576	13
Soft Maple	\$300	\$50	\$200	\$.20	\$200	-	244	3
Walnut, Black	\$1,250	\$400	\$745	\$.75	\$770	\$835	119	16
White oak (group)	\$800	\$50	\$185	\$.19	\$175	\$245	1,517	16

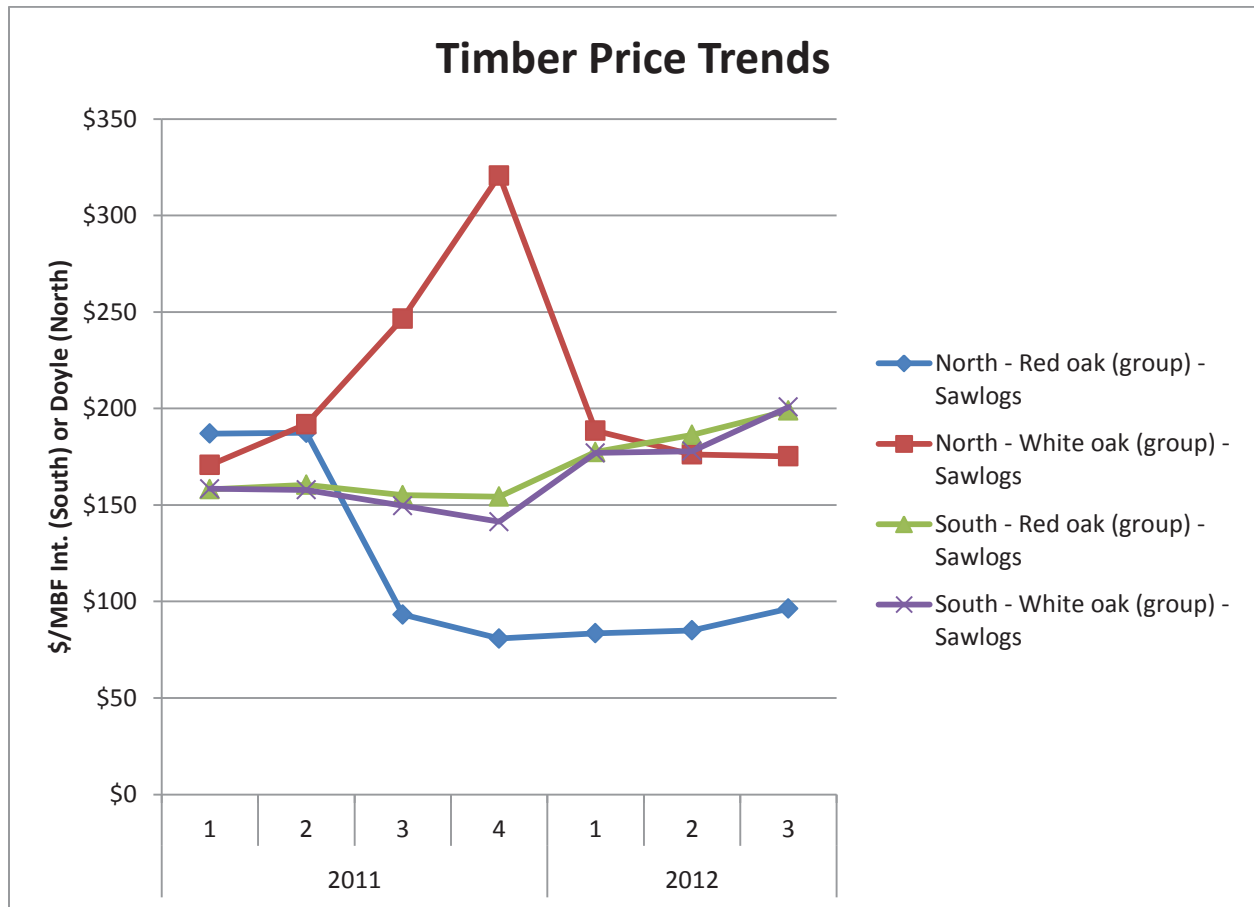
Ozarks Stumpage Prices- (Prices and volume reported in International ¼ MBF scale)

	High	Low	Average	\$/Board foot	Last Qtr.	Last Yr.	Vol.	# of Rpts.
Sawlogs								
Hickory	\$260	\$60	\$165	\$.17	\$135	\$80	220	15
Mixed Hardwoods	\$260	\$50	\$190	\$.19	\$230	\$200	573	12
Oak (mixed species)	\$220	\$40	\$125	\$.13	\$140	\$130	2,687	16
Post Oak	\$120	\$70	\$90	\$.09	\$90	\$115	54	9
Red oak (group)	\$260	\$110	\$200	\$.20	\$185	\$155	3,387	16
Shortleaf Pine	\$260	\$50	\$165	\$.17	\$145	\$55	47	10
Walnut, Black	\$665	\$85	\$225	\$.23	\$225	-	10	5
White oak (group)	\$260	\$110	\$180	\$.18	\$180	\$150	503	18

Ozarks Salvage Prices- (Prices and volume reported in International ¼ MBF scale)

	High	Low	Avg.	Vol.	# of Rpts.
Sawlogs					
Oak (mixed species)	\$150	\$42	\$111	1422	4

Note: MBF = 1,000 board feet. To convert either prices or volume from MBF to board feet divide by 1,000.



Published timber prices are based on a rolling average of reports received over the last four quarters. Refer to the column headed “# of Rpts.” to get a gauge of how accurate the average prices may be. (“# of Rpts.” refers to the number of sales including a particular species and may sum to more than the number of sales.) Changes since last quarter and last year should be read with caution as the number of reports varies each year and quarter. This report can only be used as a general guide for determining market value of timber. General market and economic conditions, as well as local considerations such as accessibility, terrain, sale size, and tree size and quality also affect the price paid.

Please see the map on page 13 for a definition of reporting regions, which have changed.

- All prices and volumes are reported in either International ¼” MBF Scale or Doyle MBF, depending on the region of the state.
- To convert volume from Int.-MBF to Doyle MBF, divide by 1.2. To convert prices from Int.-MBF to Doyle MBF, multiply by 1.2.
- To convert from MBF to BF (prices or volume), divide by 1,000.

Foresters reported stumpage prices (sales of standing timber) resulting from 74 timber sales for the 12 month period containing 118,365 MBF located throughout the state. There were 48 reports from private land timber sales and 26 reports from MDC, state land timber sales. There were 50 reports from MDC foresters, 23 reports from Consultant foresters and 1 report from other foresters. We would particularly like to thank these Consulting Foresters for contributing Timber Price Trend Reports: John Fleming, Art Suchland, Shelby Jones, Doug Enyart, Chris Lohmann, Lynn Barnickol, Jason Deschu and Mr. Jenkins. Consulting foresters are listed according to the number of reports received.

Editor's Note - Tom Treiman and Jason Jensen, Editors

We've made some changes to try to improve the report for both landowners and foresters with this issue of the Missouri Department of Conservation's *Timber Price Trends*. Due to a slow economy, and the voluntary nature of timber sale reporting in Missouri, the number of reports we receive has fallen off in recent years. The result is that some average prices were based on very few reports. Due to these issues, we began calculating average prices based on a rolling dataset of all reports from the past 12 months. The oldest quarterly report drops out as new quarterly report comes in. This should provide more reports to back up each average price, as well as removing some artificial volatility from the numbers.

We have also reduced the number of reporting regions from three to two (North/ Southwest and Ozark). This will also help to increase the number of reports that go into each published *Timber Price Trend*. Each region will report prices in the scale most commonly used in that region (Doyle for the North/ Southwest Region and International ¼ for the Ozark Region) with no "Statewide" attempt to merge the two. This will further increase the reliability of the data by eliminating error associated with converting from one scale to the other.

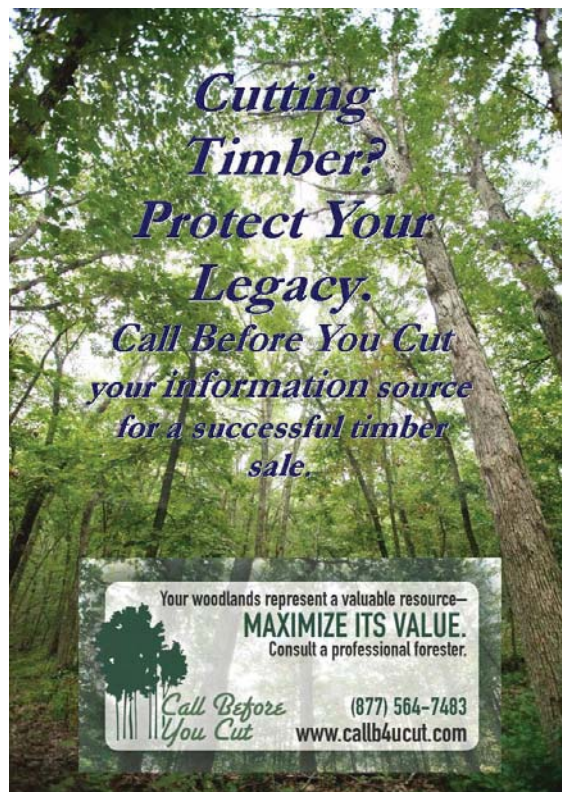
We would like to thank the members of the Missouri Forest Resources Advisory Council (MOFRAC) who helped with these changes in direction. The Missouri Consulting Foresters Association and the Missouri Department of Conservation have been instrumental in taking steps to encourage more reporting from their members and employees. Timber sale reports are critical in providing an accurate assessment of market conditions.

One of the most valuable sources for information on timber markets is the local Missouri Department of Conservation Resource Forester or your Consulting Forester. Contact the nearest Forest District office for up-to-date, local advice. The Missouri Department of Conservation's Forestry Division, (573) 751-4115, will be happy to provide you with the name and address of the Resource Forester or MDC Regional Office nearest to you. You can locate a Consulting Forester by visiting the Mo. Consulting Forester's Association web site at: www.missouriforesters.com or by visiting the Private Land Assistance page of the MDC website <http://mdc.mo.gov/landown/> and clicking on the "Conservation Assistance Contractors" link.

The logger plays a critical role in the harvesting of your timber sale. The Master Logger Certification (MLC) program can make your choice easier. The MLC program can help provide piece of mind for the landowner. Master Loggers are professional, properly trained, and meet the highest standards placed on the industry today. The MLC program is a performance based program that recognizes both training and experience. To find a Master Logger in your area visit the following website:

<http://www.moforest.org/MLC/mmlldirectory.html>

The Professional Timber Harvester (PTH) program provides four levels of chainsaw safety training, provides instruction on use and implementation of "best management practices" and forest management. PTH trained loggers possess the knowledge to harvest your timber while insuring that your residual trees, soil, and property are properly cared for. To locate a PTH trained logger in your area visit the following website: <http://www.moforest.org/loggersindex.php>



Current Market Conditions

By Jason Jensen

Markets have improved over the previous quarter. Mills were previously having a hard time moving grade lumber. Many mills had been placed on a quota for the amount of grade lumber they could sell and were sitting on significant inventories of lumber. Demand for grade lumber appears to be up although prices haven't had the same corresponding increase. Flooring grades seem to be in demand as well as most other grades. There is even a little movement in the pine market although I don't anticipate that will last. One concern in the Ozarks is that some mills have been placed on a quota for the amount of railroad ties they can produce. This is a significant concern since the tie market has really kept Missouri's timber industry "propped up" during these tough economic times. The white oak market continues to be strong especially with stave quality timber. The "white wood" species continue to be popular among consumers and demand is good especially in the River Hills. Log inventories on average tend to be low at most mills. This is a concern especially going into fall/winter.

U.S. Housing Starts Surge to Fastest Pace Since 2008

By Jason Lange, Reuters

Groundbreaking on new U.S. homes surged in September to its fastest pace in more than four years, a sign the housing sector's

budding recovery is gaining traction and supporting the wider economic recovery.

Housing starts increased 15 per cent last month to a seasonally adjusted annual rate of 872,000 units, the Commerce Department said on Wednesday.

That was the quickest pace since July 2008, though data on starts is volatile and subject to substantial revisions.

The U.S. economy has shown signs of faster growth in recent months as the jobless rate has fallen and retail sales data has pointed to stronger consumer spending.

The data showed housing, which was battered by the 2007-09 recession, is increasingly one of the brighter spots in the economy and could add to growth this year for the first time since 2005.

"One of the big headwinds for the economy has been the weak housing market and this indicates that headwind has dissipated," said Gary Thayer, an economic strategist at Wells Fargo Advisors in St. Louis, Missouri.

The brighter economic signal is likely to be welcomed at the White House, where a sluggish economy is weighing on President Barack Obama's chances of re-election next month.

Economists estimate that for every new house built, at least three new jobs are created.

More home building could help compensate for some of the weakness recently in factory

output, which is seen as due to sluggish export demand and cooling investment in capital goods.

Economists polled by Reuters had forecast residential construction rising to a 770,000-unit rate. August's starts were revised to show a 758,000-unit pace instead of the previously reported 750,000.

Housing remains hampered by an glut of unsold homes, and the housing starts rate is still about 60 per cent below its January 2006 peak.

September groundbreaking for single-family homes, the largest segment of the market, rose 11 per cent to a 603,000-unit pace – the highest level since August 2008. Starts for multi-family homes climbed 25.1 per cent.

"Things are lining up for housing and housing is likely to contribute to GDP growth this year," said John Canally, an economist at LPL Financial in Boston. "It's another step in the right direction, but you still have a long, long way to get back to 'normal' in housing."

Building permits grew by 11.6 per cent to a 894,000-unit pace in September. August's permits were unrevised at 801,000 units.

Economists had expected permits to rise to a 810,000-unit pace last month.

U.S. home sales have been creeping up and the steep decline in prices since 2006 appears to have bottomed. That has helped home-builder sentiment, which

this month rose to a fresh six-year high.

In a bid to help the economy by encouraging people to buy homes, the Fed said last month it would buy \$40-billion (U.S.) in mortgage-backed securities every month until the jobs outlook improves substantially.

The Fed's efforts to lower borrowing costs have pushed interest rates on 30-year mortgages to all-time lows. Last week, fixed 30-year mortgage rates rose 1 basis point to average 3.57 per cent, the Mortgage Bankers Association said.

Applications for U.S. home mortgages fell last week, but demand for purchase loans, a leading indicator of home sales, reached the highest level since June, the association said.

Year-over year, Chinese log and lumber imports down 19% from Jan-Aug, 2012

October 15, 2012

By: Wood Resource Quarterly

Importation of both logs and lumber to China fell substantially in 2012. Total imports, by value, during the first eight months was \$ 4.3 billion dollars, or 19% less than in 2011, with the biggest declines in logs imported from Russia and the US, and in lumber from North America.

The reduction in construction activities in China during 2012 has

resulted in reduced demand for lumber, and as a consequence, a sharp decline in the importation of softwood logs and lumber to the country. During the first eight months this year, China imported logs and lumber worth 4.3 billion dollars, or 19 percent less than the same period last year, as reported in the Wood Resource Quarterly (www.woodprices.com). By volume, log imports were down 17 percent and lumber imports down five percent.

The importation of softwood lumber in August was down for the third consecutive quarter to 1.1 million m3, which was a decline of 21 percent from May and 23 percent lower than in August 2011. Canada and Russia are the two dominant suppliers of softwood lumber to China, together accounting for 84 percent of the total imports, with the US, Chile and New Zealand making up most of the remaining import volume.

During the first eight months of this year, Russia, Chile and New Zealand have increased their shipments to China, while volumes from North America have declined. Exports from the US are down as much as 41 percent as compared to the same period in 2011.

In August, the average import value for all softwood lumber imported to China was down nine dollars to \$203/m3 from a year ago, according to Customs data. The cost for Russian lumber fell as much as \$19/m3, while Canadian average costs were down only five dollars to \$200/m3 over the past year. Costs for Canadian lumber have steadily increased from

earlier this year and here at a 12 month-high in August.

Chinese softwood log imports have fallen dramatically this year. From January through August, imports from Russia were down 21 percent, and from the US, 31 percent as compared to the same period in 2011. The two other major log-supplying countries, New Zealand and Canada, have shipped practically the same volume this year as last year.

With the reduced demand for logs by the lumber industry in China, log prices have fallen through most of 2012. According to the latest issue of the WRQ, average import softwood log values in the 3Q/12 were down 13 percent from a year ago, and domestic

Chinese-fir log prices have fallen about six percent in 12 months.

St. Louis area firms complete biomass boiler project at the University of Missouri-Columbia

**By: Robert Kelly,
St. Louis Post-dispatch**

Ladue-based McCarthy Building Cos. Inc., Chesterfield-based CB&E Construction Group and Fenton-based Kaiser Electric crews completed a project for the University of Missouri – Columbia that replaces a coal boiler at its Columbia campus power plant with a more efficient and cleaner biomass unit.

The new boiler, which was retrofitted to the university's

existing heating duct system, is expected to use an estimated 100,000 tons of in-state renewable energy sources such as chipped hardwoods and wood waste.

The new unit is also expected to reduce the campus' fossil fuel use by 25 percent. Since 2007, the power plant has been using about 5,000 tons of biomass per year, plus coal, in its other boilers.

Along with wiring the new biomass boiler, Kaiser Electric crews also provided electrical service, lighting and control and instrumentation wiring on the \$75 million project.

The general contractor on the project was McCarthy in partnership with CB&E Construction Group. Segal Engineering and Technical Services of Overland Park, Kansas was the project engineer.

Verifying Forest Sustainability

More customers and policymakers seek assurances that the forest-derived fuel or feedstock they purchase is harvested in a sustainable manner.

By: Charles A. Levesque and Eric W. Kingsley

Increased talk about the use of woody biomass for energy in the U.S. has many people wondering how best to assure that the fuel and feedstock used by wood

energy firms is harvested sustainably. The forest products industry—sawmills and pulp mills, in particular—has been down this road for more than 15 years and many have turned to the major forest certification systems available in the U.S., namely the Sustainable Forestry Initiative, the Forest Stewardship Council and the American Tree Farm System. These systems may or may not be the best way to demonstrate the sustainability of feedstock harvesting for the woody biomass energy sector. In the end, your customers' needs and your company values should drive what you do about forest sustainability.

The Forest Certification Systems

SFI, FSC and ATFS are private, non-governmental programs, all of which are part of one of two major forest certification systems in the world: the Forest Stewardship Council and Programme for the Endorsement of Forest Certification. In the U.S., the FSC system is part of the Forest Stewardship Council international program, whereas SFI and ATFS are part of PEFC.

Collectively, the three certification systems currently have 92 million acres certified in the U.S. Some of those acres are certified to both SFI and FSC and are therefore double counted, and further confusing, FSC does not allow for reciprocity with SFI or ATFS, and vice versa. Importantly, SFI and ATFS do allow reciprocity between their systems because they are both part of PEFC. SFI is for larger ownerships, over 20,000 acres, while ATFS is for ownerships smaller than 20,000 acres. Most tree farms are much smaller and average just over 200

acres.

So what do these systems do? In a nutshell, each of the FSC, SFI and ATFS systems has a standard—a series of detailed requirements for how a forest property must be managed—under which a landowner must manage in order to become certified. An outside accredited entity sends an auditor to conduct a third-part audit to determine conformance with the many detailed criteria in the standard.

The audit will be conducted by an entity that has no direct affiliation with the company or landowner being audited, ensuring that there are no conflicts of interest. If landowners pass the initial and subsequent annual audits, they can make claims about products relative to their certification program. They can also label their product with the logo of the program, if they get a companion certification to the system's chain of custody. A CoC system essentially assures that a product indeed came from a certified forest when a landowner makes that claim.

A Bit of History

Concerns over rainforest destruction lead to the Statement of Forest Principles at the 1992 Earth Summit in Rio de Janeiro. The forest principles laid out the definition of a sustainably managed forest, which was further refined through the Montreal Process. Ultimately, this led to the formation of the FSC in 1993 by a group of people from environmental organizations, social sciences and the forest industry.

The SFI was created one year later by the American Forest and Paper Association, the national trade group of the U.S. forest products industry. Originally a self-verification system, SFI changed into a full third-party system by the late 1990s. SFI only covers the U.S. and Canada, but similar country-based forest certification systems from around the world became aligned under another international umbrella system called PEFC. SFI and ATFS had to pass the requirements of PEFC to be recognized as part of that system; SFI in 2005 and ATFS in 2008. Notably, ATFS was created for U.S. landowners in the 1940s and only changed to a third-party certification system within the past 10 years.

Energy Plants and Sustainability

Energy producing plants that use wood as feedstock, whether they are producing electricity, heat, pellets or biofuel, generally have one thing in common: they do not own the forestland from which their feedstock timber is harvested. As a result, they tend to have little direct control over where and how their feedstock is produced in the woods. Some sawmills and pulp mills are similar in that regard, but even those that own forestland in large acreages do not own enough to rely solely on their own land for feedstock.

SFI, FSC and ATFS help address the challenge of accountability when sourcing feedstock from forests owned by outside parties. In each case, certified entities are

allowed to make public claims about sustainability, based on the premise that being certified to the rigorous third-party audited standard is an indication that they are managing in a sustainable way. If a wood-using energy plant were able to obtain the vast majority of its wood supply from certified forest land, it could use a CoC system to claim that its wood supply comes from sustainably harvested forests. This, however, is where the rub is. Most places in the U.S. simply do not have enough certified acreage to allow a manufacturing plant to make this claim, and the relatively low-value landowners receive from harvesting wood for energy purposes—as opposed to lumber, etc.—means that biomass users have limited opportunity to incentivize new certified acreage. Exceptions might include parts of Maine and Wisconsin, where substantial acreage is already certified to one or more of the systems. But if you aren't located in Maine and Wisconsin or some other pocket of certified forest, what do you do?

SFI has an option called fiber sourcing certification, which uses a different standard than the regular land management SFI standard. Fiber sourcing certifies the entire wood procurement system of the facility. It is a less rigorous system, but it reaches out to all the forest landowners who provide woody feedstock.

Another Approach: Design Your Own System

In some cases, it might not be feasible or practical to use SFI, FSC or ATFS to demonstrate your

commitment to forest sustainability, especially if your customers are not demanding it. In this case, there are ways to design your own system. One approach Innovative Natural Resource Solutions has used with clients is developing a tracking system for wood sources. With this approach, it can be useful to show information about where your wood comes from, the amount that comes from certified forests, or the amount that was harvested with a licensed or certified forester and/or logger involved. There are many other ways to add additional components to a self-designed system. In the end, the system should do what you and your customers need it to do.

Fourth Quarter Hardwood Price Increase Expected

By: Andy Johnson

During the first eight months of 2012, brisk industrial lumber shipments, rising flooring-grade lumber sales and record exports to the Far East helped many North American hardwood sawmills get back into the black. Relatively tight log supplies, limited access to capital, and a growing aversion to sawing unprofitable items kept mills from overproducing markets, as often occurred during past upturns. Consequently, green and kiln-dried lumber prices were unusually stable well into the summer.

With kilns turning quickly and exports seasonally slow, prices for some items are now under

downward pressure. However, we expect only minor price decreases before hardwood lumber supply and demand are again balanced, probably by the end of October.

If exports to Asia stay at record levels, domestic demand gradually expands, and lumber production stays at or near the current level—as we are forecasting—then spot shortages are likely by December. Green sawmills should have very little trouble moving lumber at steady to somewhat higher prices in the fourth quarter.

Despite the challenges of the day, domestic and international markets will offer hardwood producers plenty of business opportunities through year-end. There are still three full months left in 2012, and we expect them to be fairly good ones.

Why wood pulp is world's new wonder material

By: Will Ferguson

THE hottest new material in town is light, strong and conducts electricity. What's more, it's been around a long, long time.

Nanocrystalline cellulose (NCC), which is produced by processing wood pulp, is being hailed as the latest wonder material. Japan-based Pioneer Electronics is applying it to the next generation of flexible electronic displays. IBM is using it to create components for computers. Even the US army is getting in on the

act, using it to make lightweight body armour and ballistic glass.

To ramp up production, the US opened its first NCC factory in Madison, Wisconsin, on 26 July, marking the rise of what the US National Science Foundation predicts will become a \$600 billion industry by 2020.

So why all the fuss? Well, not only is NCC transparent but it is made from a tightly packed array of needle-like crystals which have a strength-to-weight ratio that is eight times better than stainless steel. Even better, it's incredibly cheap.

"It is the natural, renewable version of a carbon nanotube at a fraction of the price," says Jeff Youngblood of Purdue University's NanoForestry Institute in West Lafayette, Indiana.

The \$1.7 million factory, which is owned by the US Forest Service, will produce two types of NCC: crystals and fibrils.

Production of NCC starts with "purified" wood, which has had compounds such as lignin and hemicellulose removed. It is then milled into a pulp and hydrolysed in acid to remove impurities before being separated and concentrated as crystals into a thick paste that can be applied to surfaces as a laminate or processed into strands, forming nanofibrils. These are hard, dense and tough, and can be forced into different shapes and sizes. When freeze-dried, the material is lightweight, absorbent and good at insulating.

"The beauty of this material is that it is so abundant we don't have to make it," says Youngblood. "We don't even have to use entire trees; nanocellulose is only 200 nanometres long. If we wanted we could use twigs and branches or even sawdust. We are turning waste into gold."

The US facility is the second pilot production plant for cellulose-based nanomaterials in the world. The much larger CelluForce facility opened in Montreal, Canada, in November 2011 and is now producing a tonne of NCC a day.

Theodore Wegner, assistant director of the US factory, says it will be producing NCC on a large scale. It will be sold at just several dollars a kilogram within a couple of years. He says it has taken this long to unlock the potential of NCC because the technology to explore its properties, such as electron scanning microscopes, only emerged in the last decade or so.

NCC will replace metal and plastic car parts and could make nonorganic plastics obsolete in the not-too-distant future, says Phil Jones, director of new ventures and disruptive technologies at the French mineral processing company IMERYYS. "Anyone who makes a car or a plastic bag will want to get in on this," he says.

In addition, the human body can deal with cellulose safely, says Jones, so NCC is less dangerous to process than inorganic composites. "The worst thing that could happen is a paper cut," he says.

Missouri Organizes For Energy Independence

By: Jim Lane

Independence, MO – Despite having as much as two billion barrels of fossil petroleum at attractive depths in the southwest part of the state, Missouri has never developed much of a liquid fuels production industry. It's heavy oils have been costly to extract, and attempts to use new technologies such as microbial enhanced oil recovery and fracking have not yet proved generally successful.

Like many states (or countries) that have limited oil reserves or reserves that are economically unfeasible to extract at this time – the path to energy independence lies generally in Missouri's substantial "above-ground oil fields" – which is to say, in her considerable biobased resources.

To date, the state has become home to six corn ethanol plants with 275 million gallons of fuel capacity and can produce 825,000 tons of distillers grains, using up about 15 percent of the Missouri corn crop in the process – and eight biodiesel plants that with 228 million gallons in capacity.

Missouri's progress to date: first-gen biofuels

Overall, Missouri consumes 4.2 billion gallons each year of motor gasoline and diesel – so it's a long road to energy independence.

Which, according to the Digest's thesis, has kept the state overly exposed to the boom and bust economies that result from energy dependence.

As the Digest noted in a previous report, states that produced enough fuel to meet their internal demand for gasoline maintained growth rates 2.5 times above the national average, and either completely avoided the 2007-09 recession or experienced a lighter version of it. These states maintained a GDP growth in 2007-08 at five times the rate of states that were less than 20 percent energy independent.

Cellulosic biofuels production in Missouri

There's production here today of cellulosic biofuels in Missouri on a pilot scale. Last summer, ICM finished construction of its \$31 million cellulosic ethanol plant near St. Joseph. The facility has the capacity to produce 250,000 gallons a year from switchgrass, sorghum and corn stover from a 250 mile radius. The facility is one of a handful the company has received federal loans for in order to complete construction.

Growth down in the Boot Heel

Here's the great news. In the southeastern section of the state, Missouri Delta AgBioWorks – partnered with the state's Dept. of Agriculture, Sikeston Area Chamber of Commerce, Memphis BioWorks, Delta Regional Authority, Mo Technical Corporation as well as many other organizations and Universities – has set a goal to build a Bio-based economy in the 7 counties of Missouri's most productive agriculture region known as the Boot Heel of Missouri.

AgBioWorks is, itself, a multi-state consortium focused on development of a bio-based

economy in a region encompassing parts of Missouri, Kentucky, Arkansas, Tennessee and Mississippi – 98 counties that make up the Mississippi Delta region. . The group has estimated that in its region is up to 59 million tons in sustainable biomass reserves – up to 7.9 billion gallons of ethanol-equivalent fuels (using the maximum yields from cellulosic production we've seen to date in demonstration-level projects).

That's enough to lift Missouri, were all of the production realized and enough directed the Show Me State's way, into energy independence.

The full AgBioWorks report on regional biomass resources, and the proposed development of its bioeconomy, is here.

Among the near-term advantages the group sees: redeployment of existing industrial infrastructure; introduction of new, high-value crops; opportunities to attract regional investment in pilot and demonstration projects; and the opportunities to increase grower incomes by making marginal lands economically feasible.

Specifically, the AgBioWorks plans envisions up to five 200 ton per day oilseed crushing facilities, between 13 and 33 150,000 ton pellet plants for wood biomass, and up to 117 biorefineries using lignocellulosic feedstock, with average production capacities of 40 million gallons each. In the process, creating more than 5,000 new, direct jobs.

"Our focus is not only on bio-fuels but bio-based products," explains

Missouri Delta AgBioWorks director Chris Evans. “Biomass energy crops such as Giant Miscanthus, Sweet Sorghum, sugar beets, and Canola are just a few of the crops that are being grown and researched here and show the most potential as future feedstock for the region. Missouri Delta AgBioWorks along with MRI Global are also in the process of organizing an Algae Summit to be held November of 2012 in Sikeston, Missouri.”

“Our top priority from day one has been to create and protect Missouri jobs and help folks get back to work,” Missouri governor Jay Nixon explained recently as he announced a \$635K Delta Regional Authority grant, which included \$75K for Missouri AgBioWorks.

“The new ag economy can be energy – it can also be food or pharmaceuticals,” Sikeston Area Chamber executive director Missy Marshall told local reporters at the time of the grants. “There are chemical components from crop residue used to make plastic. Literally anything a petroleum product may be involved in can be produced.”

USDA steps in to assist
Last year, the USDA announced today the establishment of its first Biomass Crop Assistance Program (BCAP) Project Area to promote the production of dedicated feedstocks for bioenergy, and chose a 39-county contiguous region in Missouri and Kansas for the project.

A likely candidate for turning all that feedstock into bioenergy – in the short term, the Abengoa

Bioenergy project in Hugoton, Kansas is one possible destination.

Producers in the area will plant up to 50,000 acres of mixes of perennial native plants, such as switchgrass, for the manufacture of biomass pellet fuels and other biomass products to be used for power and heat generation. The proposed crops also will provide long term resource conserving vegetative cover. The project is a joint effort between the agriculture producers of Show Me Energy Cooperative.

The program provides an opportunity for teams of crop producers and bioenergy facilities to submit proposals to USDA to be selected as a BCAP project area. If selected, crop producers will be eligible for reimbursements of up to 75 percent of the cost of establishing a bioenergy perennial crop.

Other feedstock developments
Yesterday, researchers from the University of Missouri were awarded a \$5.4 million grant from the DOE to research non-food crops as potential biofuel feedstocks. About 100 million acres of marginalized agricultural land in 10 states along the Missouri and Mississippi Rivers are unused or underutilized but could potentially grow non-food feedstocks for biofuels.

Just last month, a \$200,000 grant opened up a new biofuel research field in Southeastern Missouri designed to test soybeans and sweet sorghum. The grant, coming from the Delta Regional Authority, the Missouri Research Corp., and the Missouri Department of Agriculture, is

sponsoring Southeast Missouri State University as it pioneers the 10-acre test plot to be harvested this fall. The plot will also look at miscanthus, switchgrass, sunflowers, canola, and sugar beets as it aims to arm local farmers with new crops and techniques to increase their earnings.

Earlier this summer, CLC bio and the International Laboratory for Tropical Agricultural Biotechnology at the Donald Danforth Plant Science Center, announced a collaboration to benefit the Virus Resistant Cassava for Africa project.

The partnership includes researchers at the Donald Danforth Plant Science Center in St Louis, MO, the National Crops Resources Research Institute in Uganda and the Kenya Agricultural Research Institute. VIRCA is applying RNAi technology to enhance resistance to virus disease in cassava cultivars preferred by farmers. VIRCA’s goal is to develop, test and deliver virus resistant cassava to smallholder farmers with no royalty fees.

Local financing and capacity expansion
As we have noted in the Digest over the years, communities that take an active role in financing energy projects see stronger project flow, and also retain more of the profits within the community, which can then be redeployed into other opportunities for economic diversification and high technology.

Missouri's St. Joseph City Council last December took a step in this direction, in authorizing up to \$25.5 million in industrial development bonds to kickstart the local Terra Bioenergy biodiesel facility that started and stalled in 2008. In order to qualify for the bonds and property tax abatements, Blue Sun must create at least 30 jobs by Dec. 31, 2014, with an average salary of \$41,600 per year, plus benefits. The project is expected to result in the addition of 30 million gallons in biodiesel capacity when completed this summer – adding to the 30 million gallons already being produced in St. Joe by AGP.

What can the Show-Me state show you? Five themes emerge from the story of Missouri's biobased development.

1. If you can't drill it, mill it. No state or community needs to be left behind in the search for energy independence. Those communities that have fossil resources – well, you know that most of those are going to be developed. But those who have less wealth below the ground, have opportunities above-ground that can supply both food, fuel and fibers.

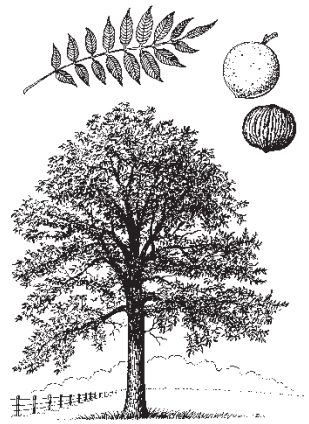
2. Slow but steady wins the race. Missouri built its initial wave of bioenergy capacity, based on existing biomass resources it knew how to aggregate and process – primarily, its abundant corn and soy assets. The state has generally avoided the irrational exuberance that usually greets new energy technologies – and thereby avoided the waves of irrational skepticism that follow in the boom-and-bust cycle.

3. Invest locally. The state has been investing and, using their bonding authorities, localized communities are getting involved too. That's keeping "eyes on the prize" in terms of assuring that all resources in the community are directed towards a project's success, while ensuring that the rewards from the risks are enjoyed at home.

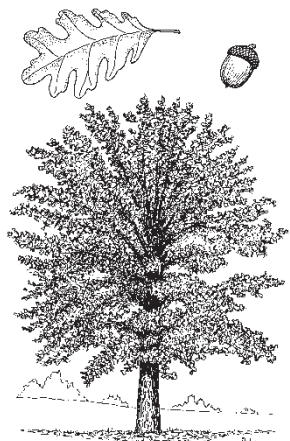
4. Have ambition. 130+ biobased production facilities sounds outrageous? Well, its ambitious – at \$8 per gallon of capacity for capital expenditure, it would require more than \$35 billion in financing. But think of it this way – the F35A fighter program at the Pentagon is expected to cost \$323 billion, at \$132 million per fighter

5. Work regionally – partner early and often. It's a mighty lift, and biomass boundaries have nothing to do with state boundaries – in fact, river resources, which form a lot of state boundary lines, are generally the heart, not the border, of project opportunity areas. Inter-state and inter-community cooperation is a must.

But public-private partnership is even more key. Take, for example, the bond program that the St. Joseph City Council approved – to revive the Terra Bioenergy project – done in partnership with Blue Sun Biodiesel and with some strict covenants on that organization.



Missouri Timber Price Trends tracks market prices for Stumpage. Reports on the Stumpage Market are received from Missouri Department of Conservation Resource Foresters and private consulting foresters. Stumpage refers to timber sold on the stump and does not reflect delivered mill prices. These reports should serve as a general guide to track stumpage prices. Landowners should not use this report to replace a timber inventory and marketing assistance as methods of conducting a sale. Missouri Department of Conservation Resource Foresters will be able to provide information on current, local market conditions. Details of all private sales and delivered prices are kept confidential.



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Missouri Timber Price Trends Reporting Regions and Sales

