

# **2016 Indiana Forest Products Price Report and Trend Analysis**

**July 2016**



Contributors: Jeffrey Settle, Forest Resource Information; Chris Gonso, Ecosystem Services Specialist for the Indiana Department of Natural Resources, Division of Forestry; and Mike Seidl, Hardwoods Program Manager for the Indiana State Department of Agriculture

## Survey Procedures and Response

Data is collected twice a year, but log prices change constantly. Standard appraisal techniques by those familiar with local market conditions should be used to obtain estimates of current market values for stands of timber or lots of logs. Please note, because of the small number of mills reporting logging costs, “stumpage prices” estimated by deducting the average logging and hauling costs (**Table 5**) from delivered log prices must be interpreted with extreme caution and is meant to only serve as a guide. Actual stumpage values you may be offered depend on many variables such as access, terrain, time of year, etc.

Data for this survey was obtained by a direct mail survey to a variety of forest product industry including sawmills, veneer mills, concentration yards, and independent log buyers. Only firms operating in Indiana were included. The survey was conducted and analyzed by the Indiana Division of Forestry. The prices reported are for logs delivered to the log yards of the reporting mills or concentration yards. Thus, prices reported may include logs shipped in from other states (e.g. black cherry veneer logs from Pennsylvania and New York).

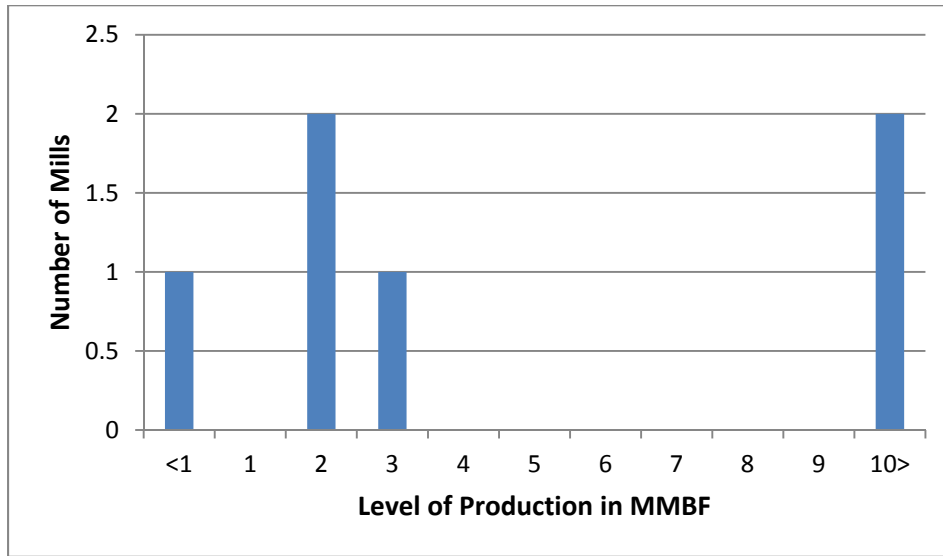
The survey was mailed to 22 firms and emailed to 31 firms. It is estimated these companies produce close to 90% of the state’s roundwood production. Electronic reminders, follow-up phone calls and additional mailings encouraged responses.

18 firms reported some useful data. Five mills reported producing 1 million board feet (MMBF) or more (Figure 1). Two mills reported production of 5 MMBF or greater. Total production reported for 2015 was 42 MMBF compared to 64 MMBF for 2014, and 147 MMBF for 2013. The largest single mill production reported was 21 MMBF. These annual levels are not comparable since they do not represent a statistical estimate of total production. The number of industry contributing price data for each product is shown in the second and third columns in Tables 2 and 3, and in the second column in Tables 4 and 5.

The price statistics by species and grade don’t include data from small custom mills, because most do not purchase logs, or they pay a fixed price for all species and grades of pallet-grade logs. They are, however, the primary source of data on the cost of custom sawing and pallet logs. The custom sawing costs reported in **Table 5** do not reflect the operating cost of large mills.

This report can be used as an indication of price trends for logs of defined species and qualities. It should not be used for the appraisal of logs or standing timber (stumpage). Stumpage price averages are reported by the Indiana Association of Consulting Foresters in the Indiana Woodland Steward, <http://www.inwoodlands.org/>.

Figure 1. Distribution of the 6 mills reporting 2015 level of production.



## Hardwood Lumber Prices

Hardwood lumber prices as of December 2015 are shown in Table 1, which represents prices per thousand board feet (MBF) for green, 1 inch thick 4/4 lumber by species and grade compiled by the Hardwood Market report out of Memphis, TN. Log prices are directly tied to lumber prices since logs are delivered to mills on a continuing basis. This allows mills to base the price they pay for logs on current lumber market prices. The link to prices paid for standing timber is less direct, depending on how far in advance of logging a stand of timber is purchased.



## Premium Species

According to some manufactures red oak is an economic indicator species in the hardwood industry. In many cases the status of the red oak market carries over to the entire hardwood market with pricing typically cycling with the general domestic economy and housing.

The growing export markets for red oak also continue to have a direct impact on pricing as well. Pricing for green upper grade (FAS&FIF), red oak lumber, with a \$200 premium peaked at \$1,310 per thousand board feet (MBF) in the summer of 2004. Prices for FAS lumber spiraled downward until July 2012 at which time the price of FAS lumber gradually rose to \$1,370 in January 2014. From that time on, prices have fluctuated to a present price of \$1,030/MBF. The premium applies when a buyer and a manufacturer negotiate a price for the purchase of lumber consisting of all 1FIF&Btr or Select & Better grades.

White oak prices are also cyclical, but the cycles are slightly more moderate than red oak's. An exception is the 42% drop in FAS plus the premium from \$1,390/MBF in 2008 to \$800/MBF in the summer of 2009. Prices rebounded and there were consistent increases from January 2012 to January 2015. Prices dipped in July 2015 but have rebounded once again to \$1,570/MBF. #1 and 2C white oak is averaging around \$582/MBF, almost 6.5% higher than in January of 2016.

Black walnut is in the process of price adjustment with year to date exports of Walnut are down 7% through October. Domestic markets remain static, especially the in the distribution sector. After several weeks of price drops in 2014, walnut pricing stabilized and began to rise ending 2014 at \$3000/MBF. Current FAS pricing is \$2,515/MBF.

Black cherry markets are in sad shape. Consumer demand for the darker colored wood is just not there. FAS lumber prices have decreased 21% since July 2014 to a current price of \$1,210/MBF. Most producers are avoiding cherry at all costs. The only bright spot are export markets for upper grade lumber to China but it is not enough to offset the poor domestic markets.

In the past 6 months hard maple has been one of the better species in the market place. FAS lumber prices consistently rose from January 2012 thru July 2014. Prices have decreased slightly to a current price of \$1,300/MBF. #1C markets have been more volatile, dropping 33% since July 2014.

## Other Species

Since the summer of 2011 a low point in FIF&BTR., tulip poplar prices and their respective markets have continually risen to the current price of \$830/MBF. Common grade poplar price however have been decreasing since July 2014. #1C prices are \$475/MBF and #2C at \$335/MBF

Soft maple markets continue to be the shining star among the hardwood species even though prices have leveled off in recent weeks. Since January 2012, prices for FAS lumber have increased 48% to its current price of \$1,250/MBF. Common grade prices have also consistently rose since the same time period with #1C prices increasing 46% and 45% respectively.

Ash lumber markets are suffering from large inventories and increased regulations overseas regarding the Emerald Ash Borer (EAB). FAS lumber prices have been decreasing since January 2015 and are now 17% lower at \$950/MBF. Common grade ash lumber markets are following the same trend with #1C now at \$585/MBF and #2C at \$375/MBF (both -25%).

Beech pricing for FAS lumber finally realized a slight increase. For several years, FAS lumber was priced at \$500/MBF. Current FAS prices are reported at \$545/MBF. Similarly common grade beech prices have increased as well; with #1C at \$460/MBF and #2C at \$350/MBF.

Hickory markets remain slow. Flooring companies are buying less lumber as are the cabinet companies. FAS pricing is at \$820/MBF, which is an 18% decrease since January 2015. #1C prices have decreased almost 36% and #2C prices have dropped 32% since January 2015

**Table 1. Hardwood lumber prices, dollars per one thousand board feet (MBF), 1-inch-thick (4/4) Appalachian market area unless otherwise indicated. Source: *Hardwood Market Report*, P.O. Box 2633, Memphis, TN 38088-2633**

Lumber/Grade	Jan 2012	Jul 2012	Jan 2013	July 2013	Jan 2014	July 2014	Jan 2015	July 2015	Jan 2016	July 2016
<b>Ash</b>										
FAS + Prem.	800	845	845	845	875	1,085	1,110	1,150	1,085	950
No. 1C	575	585	585	585	620	780	795	780	685	585
No. 2A	360	360	360	350	350	450	460	505	455	375
<b>Basswood</b>										
FAS + Prem.	630	630	630	645	660	695	695	695	775	795
No. 1C	345	345	345	385	405	430	430	430	465	460
No. 2A	190	190	190	210	210	230	230	230	245	245
<b>Beech</b>										
FAS	500	500	500	500	500	500	500	500	555	545
No. 1C	420	420	420	420	420	420	420	420	460	460
No. 2A	345	345	345	345	345	345	345	345	360	350
<b>Cottonwood (Southern)</b>										
FAS	635	635	635	635	670	685	705	745	765	780
No. 1C	435	435	435	435	470	480	500	535	545	560
No. 2A	220	220	240	255	240	260	260	260	260	260
<b>Cherry (North Central)</b>										
FAS + Prem.	1,355	1,440	1,335	1,345	1,345	1,540	1,520	1,495	1,265	1,210
No. 1C	655	720	705	780	775	1,050	1,035	1,015	825	775
No. 2A	330	375	375	445	455	675	660	645	475	405
<b>Hickory</b>										
FAS + Prem.	670	720	720	775	845	1,000	1,000	905	830	820
No. 1C	560	595	595	660	715	835	835	705	545	535
No. 2A	415	445	445	480	520	615	615	545	425	415
<b>Hard Maple (unselected)</b>										
FAS + Prem.	1,050	1,050	1,075	1,305	1,390	1,450	1,390	1,220	1,305	1,300
No. 1C	735	750	790	1,000	1,180	1,260	905	700	850	840
No. 2A	565	555	550	685	810	835	655	495	495	485

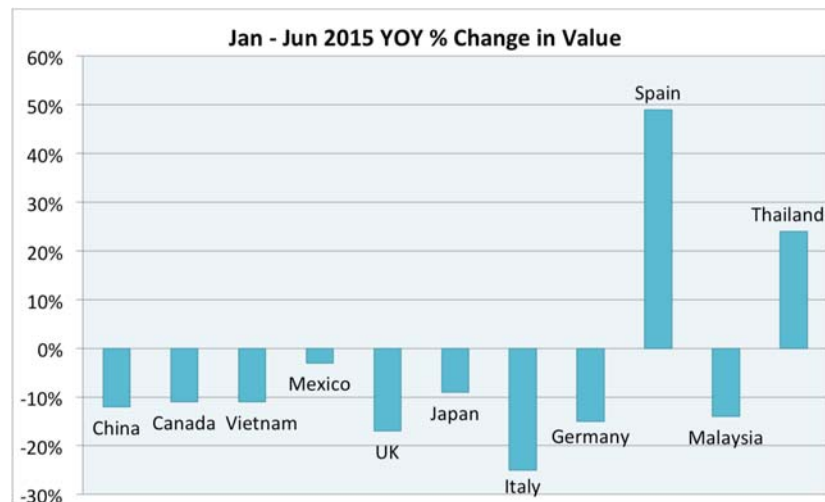
**Table 1. (continued)**

<b>Soft Maple (unselected)</b>										
FAS + Prem.	845	920	940	1,000	1,040	1,115	1,115	1,095	1,210	1,250
No. 1C	595	610	650	710	785	845	750	635	825	870
No. 2A	330	330	340	360	455	500	490	450	460	480
<b>White Oak (plain)</b>										
FAS + Prem.	995	1,015	1,015	1,055	1,295	1,410	1,410	1,340	1,440	1,570
No. 1C	555	555	575	695	845	960	920	665	710	790
No. 2A	420	410	475	620	660	660	650	485	470	480
<b>Red Oak (plain)</b>										
FAS + Prem.	830	830	880	1,045	1,370	1,335	1,145	935	1,040	1,030
No. 1C	535	520	570	690	860	930	795	550	610	665
No. 2A	430	420	495	650	700	700	690	500	485	500
<b>Yellow Poplar</b>										
FAS + Prem.	590	700	760	775	775	830	830	830	830	830
No. 1C	385	445	490	505	505	545	545	535	515	475
No. 2A	300	310	330	340	355	385	385	385	365	335
<b>Sycamore (Southern plain)</b>										
FAS	455	455	455	455	455	455	455	455	455	455
No. 1C	435	435	435	435	435	435	435	435	435	435
No. 2A	375	375	375	375	375	375	375	375	375	375
<b>Black Walnut</b>										
FAS	2,070	1,815	1,795	1,815	2,325	2,890	3,040	2,575	2,425	2,515
No. 1C	1,075	905	875	875	1,235	1,590	1,645	1,310	1,270	1,270
No. 2A	705	505	475	475	730	990	1,035	745	730	715

## Exports

Overall exports of US Hardwood products are down on the year in comparison to 2014, but some markets are showing growth. The largest export market, China, is importing significantly less US hardwood lumber so far this year (12%) and Vietnam a market that has shown considerable growth recently, is down 11% in lumber this year. This graph shows the top individual markets in 2014 and the current gain or loss in value by percentage so for this year. Spain and Thailand have grown considerably 49% and 24% respectively. Overall exports of US hardwood lumber are down 9% this year in comparison to 2014 totals, but it is important to note that the US is still on pace to export just over \$2 billion of lumber for our second highest export total ever.

Figure 2. Key Market Change in Value (American Hardwood Export Council-2015)



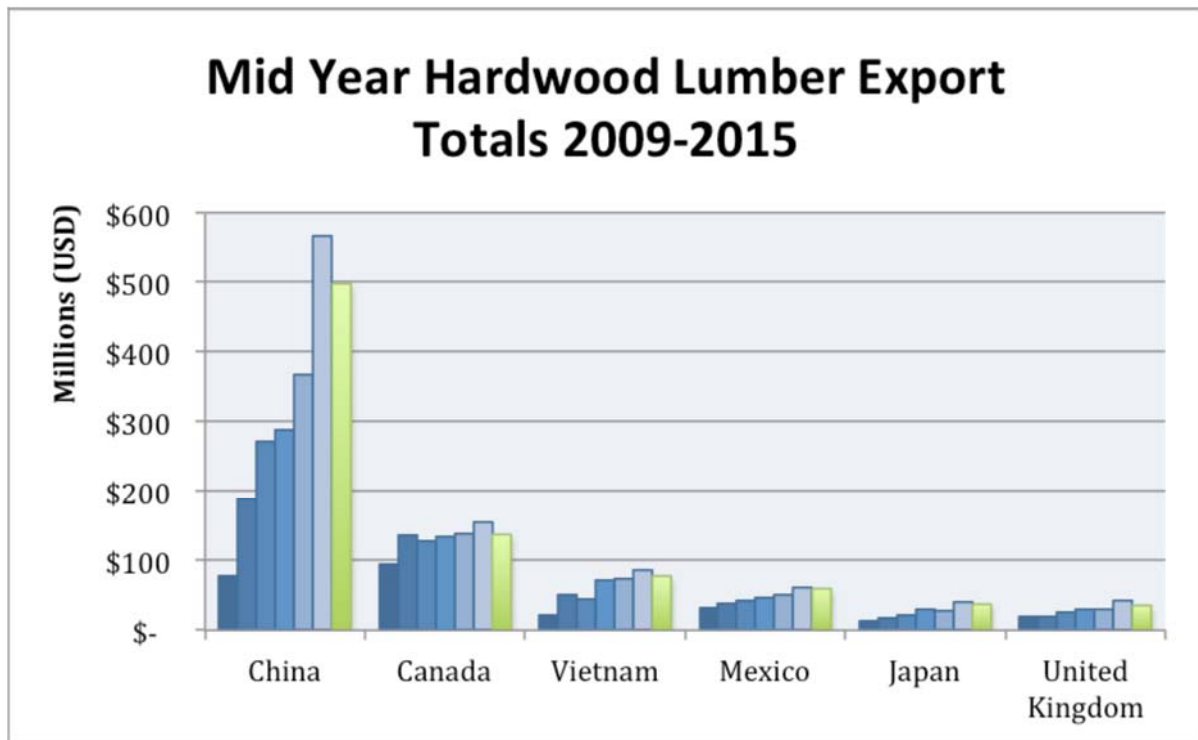
Logs

China, Canada and Vietnam remain the three largest importers of hardwood logs from the U.S. in 2014 according to USDA-FAS Hardwood Export Statistics. Over 850 million BF of logs from the U.S. were exported worldwide with the China, Canada and Vietnam making up 84% of the total. China surpassed Canada for the first time in 2014 as the largest importer in log value and in quantity. Red oak, black walnut and white oak veneer & saw logs remain the core for China with hard maple, red oak, birch and tulip poplar, red oak and white oak for Canada and Vietnam respectively. In the second quarter of this year log prices began to level off and even drop in some species from historic highs. The normal seasonal slowdowns in the veneer market along with the continued strength of the U.S. dollar are the primary reasons for this change. Additionally, Russia along with other Asian imports could increase their market share if they can overcome operational and logistic problems.

Lumber

The US hardwood export market is experiencing an adjustment period but is still in a strong position globally. Figure 2 shows the midyear export totals for US Hardwood Lumber since 2009. The current total for 2015 is marked in green. As you can see, in these markets the yearly total, though down, is still an improvement on 2013 --- and in many cases is still the second highest Jan---Jun total ever.

*Figure 3. Mid-year Hardwood Lumber Export (American Hardwood Export Council-2015)*



## Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices remained fairly constant to those who reported in the 2015 winter report. (Table 2). Sawlog prices for the premium species (specifically black walnut and white oak) were down slightly from the 2015 winter report. From an overall standpoint, prices were up for most of the other species. Generally soft maple markets are better than all other species. While not what there were a year ago, white oak and walnut markets are steady. Red oak demand is sluggish. Markets are trending down for poplar, hickory and ash. In the paragraphs below, we'll examine these species in more detail.



### Premium Species

With the exception of prime grade (up 15%), the remaining 3 grades of white oak sawlogs were slightly lower (-2.3%). The demand for stave logs has slowed for the time being and this has put more white logs on the sawlog market. With the markets being so strong for veneer, stave, and rift/quartered logs; finding larger, quality logs has become quite a challenge. In a complete reversal from the 2015 winter report, prices being paid for red oak were up across all grades with prime leading the way at 14% higher.

Demand for black walnut sawlogs had slowed down when the 2015 winter report was completed and that trend continues. Prices were down across all log grades with No. 2 and No. 3 both at almost 18%.

Black cherry sawlog prices have not changed much since the 2015 winter report. Prime logs were off almost 4% while No.1 and No.2 prices were just slightly higher and No. 3 log prices were off less than 1%. Consumer demand for the darker finished wood continues to hurt the cherry markets.

Hard maple sawlog prices were generally higher across the various grades. Prime logs were 14% higher and No.1 and No. 2 were just slightly higher than the 2015 winter report. No. 3 logs were the lone item that decreased - -5.2%. The summer and early fall months usually see less hard maple production due to the fear of stain and this may have played a large part in the price drops. Soft maple markets have been pretty steady due to strong lumber demand. Consumers are buying more painted wood materials which play very well into soft maple's hands. Soft maple logs averaged just over 5% higher across grades.



Other Hardwood Species

More and more Ash timber is being harvested in an effort to stay ahead of the Emerald Ash Borer. Production is high right now. That being said, prime ash sawlog prices were significantly higher from the 2015 winter report at 17%. The remaining 3 grades were only a combined 1% higher than the 2015 winter report.

Tulip poplar decreased across all grades. Prime sawlogs were reported to be only 2.4% less than the 2015 winter report while the remaining 3 grades combined for a 7.5% decrease.

Softwood Logs

The price of pine sawlogs increased 22% to \$283/MBF. Red cedar prices were also up almost 21% from the 2015 winter report. It should be noted however that only three producers reported pine sawlog prices and two producers reported red cedar prices.

**Table 2. Prices paid for delivered sawlogs by Indiana sawmills (March 2016).**

Species/Grade	16-Jul Range (\$/MBF)	No. Responses		Mean (s.e.) <sup>1</sup>		Median		Change (%)	
		15-Oct	16-Jul	15-Oct	16-Jul	15-Oct	16-Jul	Mean	Median
				(\$/MBF)		(\$/MBF)			
<b>White Ash</b>									
Prime	650-700	4	4	588	688	625	700	17.0	12.0
				65.75	12.50				
No. 1	350-600	8	7	481	486	475	500	0.9	5.3
				44.26	32.21				
No. 2	300-500	7	6	375	375	350	375	0.0	7.1
				41.90	30.96				
No. 3	240-400	6	5	300	308	300	300	2.7	0.0
				46.55	25.77				
<b>Beech</b>									
Prime	300-400	4	3	325	333	325	300	2.6	-7.7
				14.43	33.33				
No. 1	300-400	5	5	262	320	300	300	22.1	0.0
				27.28	20.00				
No. 2	250-400	5	4	232	313	250	300	34.7	20.0
				32.77	31.46				
No. 3	200-400	6	5	235	278	250	300	18.1	-0.8
				29.86	34.49				
<b>Cherry</b>									
Prime	500-900	4	4	700	675	700	650	-3.6	-7.1
				40.82	85.39				
No. 1	400-750	8	7	556	557	550	550	0.2	0.0
				35.90	50.51				
No. 2	260-600	7	6	418	427	400	400	2.1	0.0
				23.60	46.67				
No. 3	240-400	6	5	308	308	300	300	-0.1	0.0
				30.05	30.23				
<b>Hickory</b>									
Prime	500-600	4	4	538	550	550	550	2.3	0.0
				37.50	28.87				
No. 1	350-500	8	7	419	409	400	400	-2.4	0.0
				26.92	24.92				
No. 2	300-400	7	6	354	337	350	335	-4.8	-4.3
				30.09	15.63				
No. 3	240-350	6	5	292	288	300	300	-1.3	0.0

**Table 2. (continued)**

<b>Hard Maple</b>									
Prime	800	4	4	700	800	750	800	14.3	6.7
				70.71	0.00				
No. 1	400-700	8	7	563	579	575	550	2.9	-4.3
				41.99	39.12				
No. 2	350-600	7	6	425	425	400	400	1.0	0.0
				40.90	35.60				
No. 3	240-400	6	5	325	308	300	300	-5.2	0.0
				49.58	25.77				
<b>Soft Maple</b>									
Prime	450-600	4	4	488	513	475	500	5.1	5.3
				42.70	31.46				
No. 1	350-500	8	7	369	393	350	350	6.5	0.0
				16.19	22.96				
No. 2	250-400	7	6	307	317	300	300	3.1	0.0
				22.96	21.08				
No. 3	240-350	6	5	258	276	275	250	6.8	-9.1
				23.86	21.56				
<b>White Oak</b>									
Prime	800-1000	4	4	825	950	800	1000	15.2	25.0
				103.08	50.00				
No. 1	500-800	8	7	663	657	625	600	-0.8	-4.0
				52.40	42.86				
No. 2	400-600	7	6	482	467	450	450	-3.2	0.0
				54.20	30.73				
No. 3	300-400	7	5	350	340	300	300	-2.9	0.0
				53.45	24.49				
<b>Red Oak</b>									
Prime	800	4	4	613	700	600	700	14.3	16.7
				31.46	57.74				
No. 1	375-700	8	7	478	514	500	500	7.6	0.0
				18.56	40.04				
No. 2	300-600	7	6	379	404	375	375	6.8	0.0
				22.11	44.92				
No. 3	240-500	6	5	308	348	300	300	12.9	0.0
				27.13	45.87				

**Table 2. (continued)**

<b>Tulip Poplar</b>									
Prime	450-600	4	4	525	513	525	500	-2.4	-4.8
				23.27	31.46				
No. 1	250-450	8	7	413	386	400	400	-6.5	0.0
				32.39	28.27				
No. 2	200-400	7	6	343	317	350	325	-7.6	-7.1
				35.23	27.89				
No. 3	240-300	6	5	292	266	300	250	-8.8	-8.8
				39.62	14.00				
<b>Black Walnut</b>									
Prime	1500-2000	4	3	1719	1667	1437.5	1500	-3.0	4.3
				440.10	166.67				
No. 1	1000-1400	8	6	1319	1133	1150	1100	-14.1	-4.3
				193.17	66.67				
No. 2	500-1000	8	5	963	790	775	800	-17.9	3.2
				169.76	90.00				
No. 3	350-700	7	4	579	475	400	425	-17.9	6.3
				123.86	82.92				
<b>Softwood</b>									
Pine	250-300	4	3	220	283	250	300	28.8	39.5
				31.36	16.67				
Red cedar	300-500	3	2	317	400	400	400	26.3	33.3
				101.38	100.00				

## Veneer Log Prices

The number of mills reporting veneer log prices decreased slightly from the 2015 winter report (Table 3). Prices were reported by both veneer mills and sawmills. Sawmills resell their veneer quality logs to veneer mills, exporters, overseas importers and manufactures. On occasion sawmills may produce specialty cuts like quarter sawn with the marginal veneer logs. The variation in veneer log pricing is due to mix veneer mills, sawmills and loggers reporting their values. This difference in values could be reduced if prices were only from veneer manufactures.

Demand was reported to be slower in the winter report. That demand has picked up slightly since the first of the 2016 with most mills running at 70%-80% capacity. Conversely, veneer quality logs continue to remain in demand and overall pricing is higher than what was reported in the 2015 winter report. Additionally, weather conditions like the economic environment can play havoc on log pricing and volumes available.

Black walnut and white oak veneer remain in demand both domestically and internationally. Black walnut veneer log prices were generally higher, especially prime in the 12" small end diameter all the way up to 23" small end diameter, averaging almost 9% higher. Pricing for 24" and larger prime veneer logs averaged 3.5% less. Select walnut veneer logs averaged almost 6% higher across the various diameters.

White oak prime veneer log pricing was up significantly from the 2015 winter report averaging an increase of over 11% while select veneer logs were up 12% across all diameters. With stave log supply/demand ratio in better balance, there should be more logs available on the market.

Red oak prime veneer log prices were down an average of 19% and select veneer log prices saw an average 5%.

Veneer mills reported significantly lower prices for hard maple. Prime veneer hard maple logs were off an average of almost 16% while select veneer logs were down an average of 20%. Additionally, a slower economic condition throughout the international markets also increases the pressure on export log value and should continue into 2016.

These economic conditions will also affect white oak veneer, but to a much smaller degree. White oak markets are improved due to the stave market cooling off in recent months. There is still good demand though for rift and quartersawn white oak. When you add the demand for quarter-sawn and export lumber to the mix, the pressure for logs increases exponentially. Look for white oak logs to remain constant for 2016 and possibly longer.

**Table 3. Prices paid for delivered veneer logs by Indiana mills (March 2016).**

Species/Grade	16-Mar Range (\$/MBF)	No. Responses		Mean (s.e.) <sup>1</sup>		Median		Change (%)	
		15-Oct	16-Mar	15-Oct	16-Mar	15-Oct	16-Mar	Mean	Median
				(\$/MBF)		(\$/MBF)			
<b>Black Walnut</b>									
<b>Prime</b>									
12-13	2500-4750	7	6	2,971	3,542	3,000	3,750	19.2	25.0
				484	367.52				
14-15	4000-5500	8	6	4,219	4,333	4,500	4,000	2.7	-11.1
				538	247.21				
16-17	5000-6750	8	6	5,563	5,792	5,750	5,750	4.1	0.0
				467.11	245.09				
18-20	7000-8500	7	6	6,750	7,417	7,500	7,250	9.9	-3.3
				548.27	238.63				
21-23	8000-10500	7	5	8,571	9,300	9,500	10,000	8.5	5.3
				693.75	538.52				
24-28	9500	7	2	10071	9500	11000	9500	-5.7	-13.6
				922.14	0.00				
>28	10000	4	2	9875	10000	9500	10000	1.3	5
				1663.02	0.00				

**Table 3. (continued)**

<b>Select</b>									
12-13	2000	4	2	2025	2000	1875	2000	-1.2	6.7
				650.80	0.00				
14-15	3500	4	2	2825	3500	3000	3500	23.9	16.7
				761.99	0.00				
16-17	4500	4	2	3875	4500	3750	4500	16.1	20.0
				1028.25	0.00				
18-20	3200-6000	4	3	4,750	5,067	4,750	6,000	6.7	26.3
				877.97	933.33				
21-23	3500-6000	4	3	5,500	5,167	5,500	6,000	-6.1	9.1
				1020.62	833.33				
24-28	4000-6500	4	3	6,250	5,667	6,500	6,500	-9.3	0.0
				1198.96	833.33				
>28	6500	3	2	5883	6500	6000	6500	11.4	8.3
				1301.71	0.00				
<b>White Oak</b>									
<b>Prime</b>									
13-14	1700-2300	8	4	1,800	1,925	1,925	1,850	6.9	-3.9
				199.33	143.61				
15-17	2300-2500	9	4	2,056	2,400	2,300	2,400	16.8	4.3
				176.47	57.74				
18-20	2700-3000	7	4	2,614	2,800	2,700	2,750	7.1	1.9
				168.22	70.71				
21-23	3500	7	3	3050	3500	3150	3500	14.8	11.1
				246.16	0.00				
24-28	4000	7	3	3279	4000	4000	4000	22.0	0.0
				553.33	0.00				
>28	4000	5	2	3960	4000	3800	4000	1.0	5.3
				449.00	0.00				
<b>Select</b>									
13-14	1400	6	2	N/A	1,400	1,500	1,400	N/A	-6.7
					0.00				
15-17	1800	6	2	1,675	1,800	1,775	1,800	7.5	1.4
				247.57	0.00				
18-20	2000	4	2	1,988	2,000	2,075	2,000	0.6	-3.6
				393.90	0.00				
21-23	2500	4	2	2,138	2,500	2,275	2,500	17.0	9.9
				467.87	0.00				
24-28	2750	3	2	2,000	2,750	1,750	2,750	37.5	57.1
				661.44	0.00				
>28	2750	2	2	2,500	2,750	2,500	2,750	10.0	10.0
				1500.00	0.00				

Table 3. (continued)

<b>Black Cherry</b>									
<b>Prime</b>									
12-13	3000	4	2	1,900	3,000	2,000	3,000	57.9	50.0
				493.29	0.00				
14-15	3500	4	2	2,150	3,500	2,000	3,500	62.8	75.0
				699.40	0.00				
16-17	4000	6	2	2,417	4,000	2,250	4,000	65.5	77.8
				416.67	0.00				
18-20	4500	6	2	2,492	4,500	2,250	4,500	80.6	100.0
				428.26	0.00				
21-23	4500	5	2	2,600	4,500	2,000	4,500	73.1	125.0
				484.77	0.00				
24-28	5000	4	2	3,000	5,000	2,500	5,000	66.7	100.0
				707.11	0.00				
>28	5000	4	2	3,000	5,000	2,500	5,000	66.7	100.0
				707.11	0.00				
<b>Select</b>									
12-13	2000	1	2	2,000	2,000	2,000	2,000	0.0	0.0
				0.00	0.00				
14-15	2500	1	2	3,000	2,500	3,000	2,500	-16.7	-16.7
				0.00	0.00				
16-17	3000	1	2	3,000	3,000	3,000	3,000	0.0	0.0
				0.00	0.00				
18-20	1500-3000	1	2	3,500	2,500	3,500	3,000	-28.6	-14.3
				0.00	500.00				
21-23	3000	1	2	3,500	3,000	3,500	3,000	-14.3	-14.3
				0.00	0.00				
24-28	3000	1	2	3,500	3,000	3,500	3,000	-14.3	-14.3
				0.00	0.00				
>28	3000	1	2	3,500	3,000	3,500	3,000	-14.3	-14.3
				0.00	0.00				
<b>Red Oak</b>									
<b>Prime</b>									
16-17	1200-1600	6	5	1,075	1,460	1,100	1,500	35.8	36.4
				128.94	74.83				
18-20	1200-1600	7	5	1,150	1,460	1,200	1,500	27.0	25.0
				124.88	74.83				
21-23	1200-1600	7	4	1,179	1,450	1,200	1,500	23.0	25.0
				103.43	95.74				
24-28	1200-1600	7	3	1,186	1,467	1,200	1,600	23.7	33.3
				98.63	133.33				
>28	1600	5	2	1,240	1,600	1,400	1,600	29.0	14.3
				143.53	0.00				

**Table 3. (continued)**

<b>Select</b>									
16-17	1300	1	2	1,100	1,300	1,100	1,300	18.2	18.2
				0.00	0.00				
18-20	1300	1	2	1,100	1,300	1,100	1,300	18.2	18.2
				0.00	0.00				
21-23	1300	1	2	1,100	1,300	1,100	1,300	18.2	18.2
				0.00	0.00				
24-28	1300	1	2	1,100	1,300	1,100	1,300	18.2	18.2
				0.00	0.00				
>28	1300	1	2	1,100	1,300	1,100	1,300	18.2	18.2
				0.00	0.00				
<b>Hard Maple</b>									
<b>Prime</b>									
16-20	2000-3750	8	5	2,125	3,050	2,000	3,250	43.5	62.5
				205.94	348.21				
> 20	2500-4250	7	4	2,357	3,613	2,500	3,850	53.3	54.0
				303.05	416.02				
<b>Select</b>									
16-20	3000	2	2	1,000	3,000	1,000	3,000	200.0	200.0
				0.00	0.00				
> 20	3500	2	2	1,000	3,500	1,000	3,500	250.0	250.0
				0.00	0.00				
<b>Yellow Poplar</b>									
<b>Prime</b>									
16-20	650-900	4	3	675	733	600	650	8.6	8.3
				110.87	83.33				
> 20	650-900	4	4	738	733	750	650	-0.6	-13.3
				55.43	83.33				
<b>Select</b>									
16-20	N/A	1	0	350	N/A	350	N/A	N/A	N/A
				0					
> 20	N/A	1	0	350	N/A	350	N/A	N/A	N/A
				0					

## Miscellaneous Products

The change in prices paid for or received for various raw-wood products between the spring 2015 report and the current report. (Table 4). These are lower quality and sometimes smaller logs purchased in batches of random species to be sawn into cants or chipped. The cants are re-sawn into boards used for pallets, blocking, railroad ties or other industrial applications that have a strong market. Some mills restrict purchases to specific species or exclude specific species, depending on the markets they sell to. The price for pallet and cant logs decreased slightly, pulpwood and bark prices generally decreased, and sawdust prices increased from the spring report.

Until about the 1970's sawdust, chips and bark would have been burned or landfilled by many mills. They now have many more uses. Sawdust can be used to make fuel pellets, burned as a heating source, or used as animal bedding. Wood chips are produced primarily from slabs sawn off of debarked logs. The decline in the pulp and paper industry is a threat to this market. Bark used for landscape mulch is now a large market. In some



facilities all or some portion of these byproducts are used to fire efficient low-emission boilers to heat dry kilns year round and heat facilities in the winter. Attempts have been made to cogenerate electricity at mills, standalone generating plants, and biofuel. Success has been limited by the low cost of electricity purchased off of the grid, below cost price received if sold into the grid, and the high cost to produce biofuels.

**Table 4. Prices of miscellaneous products reported by Indiana mills (March 2016), free on board (fob) the producing mill.**

	No. Responses	Range	Mean		Median	
		16-Mar	15-Oct	16-Mar	15-Oct	16-Mar
Pallet logs, \$/MBF	6	240-300	266	285	300	300
Pallet logs, \$/ton	2	36-50	43	43	40	43
Pulpwood, \$/ton	2	32-38	20	35	20	35
Pulp chips, \$/ton	5	12-34.4	20	26	21.8	27
Sawdust, \$/ton	3	7-35	N/A	22	N/A	23.7
Sawdust, \$/cu. yd.	2	7-13	16	10	11.5	10
Bark, \$/ton	2	2.5-10	9	6	8.75	6.25
Bark, \$/cu. yd.	3	4-23	9	11	7	5
Mixed, \$/ton	0	N/A	15	N/A	15	N/A
Mixed, \$/cu. yd.	0	N/A	3	N/A	3	N/A

## Custom Costs

Costs of custom services increased from the spring report in the areas of sawing and logging (per/MBF). The high cost of diesel fuel usually plays a large role in logging costs (**Table 5**). Logging costs as reported in this survey indicate an increase in logging costs from \$160 to \$253 per MBF.

**Table 5. Custom costs reported by Indiana mills (March 2016)**

	No. Respons	16-Mar	Mean		Median	
		Range	15-Oct	16-Mar	15-Oct	1-Mar
Sawing (\$/MBF)	4	250-400	317	313	300	300
Sawing (\$/hour)	1	150	N/A	150	N/A	150
Logging (\$/MBF)	4	160-253	200	209	200	212
Hauling (\$/MBF)	4	40-70	85	55	85	55
Distance (miles)	1	50	47	50	45	50
\$/MBF/mile	0	N/A	N/A	N/A	N/A	N/A

## Indiana Timber Price Index

The delivered log prices collected in the Indiana Forest Products Price Survey are used to calculate the delivered log value of typical stands of timber. This provides trend-line information that can be used to monitor long-term prices for timber. The species and log quality weights used to calculate the index are described in previous editions of this report, available at

<https://ag.purdue.edu/fnr/Pages/extforestsprice.aspx>. The weights are based primarily on the 1967 Forest Survey of Indiana with changes made to remove basswood, cottonwood, elm, black oak and sycamore in 2014. Relative weights of species comprising an average and quality stand can be found in Table 6.

**Table 6. Species composition of the Indiana timber price index for an average and a quality stand.**

Species	Average Stand	Quality Stand
<i>Veneer Species:</i>	(%)	(%)
White oak	18.0	24.9
Red oak	20.2	23.7
Hard maple	12.9	16.6
Yellow poplar	10.1	10.7
Black walnut	7.2	5.9
<i>Non-veneer species:</i>		
White ash	7.8	3.7
Beech	7.5	3.7
Black cherry	1.1	3.7
Hickory	6.3	3.7
Soft maple	9.0	3.7

The nominal (not deflated) price (columns three and six in Table 7) is a weighted average of the delivered log prices reported in the price survey. The price indexes [columns (4) and (7)] are the series of nominal prices divided by the price in 1957, the base year, multiplied by 100. Thus, the index is the percentage of the 1957 price. For example, the average price in 2016 for the average stand was 938.1 percent of the 1957 price. The index for a quality stand increased from 1007 percent to 1146 percent.

The real prices [columns (5) and (8)] are the nominal prices deflated by the producer price index for finished goods, with 1982 as the base year [Table 6, column (2)]. The real price series represents the purchasing power of dollars based on a 1982 market basket of finished producer goods. It's this real price trend that is important for evaluating long-term investments like timber and the log input cost of mills. Receiving a rate of return less than the inflation rate means that the timber owner is losing purchasing power, a negative real rate of return.

Note that each year the previous year's number is recalculated using the producer price index for finished goods for the entire year. The price index used for the current year is the last one reported for the month when the analysis is conducted: March this year. The index decreased from 1.93 for 2015 to 1.83 as of March 2016. Inflation in the 1 to 2 percent range is generally considered a sign of a healthy, growing economy. The change from 2015 to 2016 is about 2 percent.

#### Average Stand

The nominal weighted average price for a stand of average quality increased from \$535.1 in 2015 to \$559.0 this year (Table 7, column three and Figure 4). Again, this series is based on delivered log prices, not stumpage prices.

The deflated, or real, price increased from \$277.7 in 2015 to \$306.5 this year. The new equation for the trend line for the 1957 to 2016 period is,

Avg. Stand Real Price =  $199.07 + 1.77 \times T$ , where,

T = 1 for 1957, 2 for 1958 . . . 60 for 2016

The average annual compound rate of interest required to take the linear trend line from \$201 in 1957 to \$305 in 2016 is .71 percent. Compare the green trend line with the red real price line in Figure 4.

### Quality Stand

The nominal weighted average price for a high-quality stand increased from \$722.9 in 2015 to \$822.7 this year. (Table 7, column six and Figure 5). The average real price series for a high-quality stand increased from \$375.1 in 2015 to \$451.0 this year.

The average annual compound rate of increase for the trend line is 1.02% per year (Figure 5). The equation for the trend line is,

Quality Stand Real Price =  $242.3 + 3.43 \times T$ , where

T = 1 for 1957, 2 for 1958 . . . 60 for 2016

Again, compare the green trend line with the red real price line in Figure 5.

### Implications

The extent to which holding a stand of timber increases purchasing power depends on when you take ownership and when you liquidate. The 60 year period used in this analysis is much longer than the typical length of ownership. The rate of increase in the trend line doesn't include the return resulting from increase in volume per acre by physical growth, nor the potential increase in unit price as trees get larger in diameter and increase in quality. Maximizing these increases in value requires timber management.

**Table 7. Weighted average actual price, price index and deflated price for an average and quality stand of timber in Indiana, 1973-2016.**

Year	Producer Price Index	Average Stand			Quality Stand		
		Nominal	Index	Real	Nominal	Index	Real
		Price	Number	Price 1	Price	Number	Price 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		(\$/MBF)		(\$/MBF)	(\$/MBF)		(\$/MBF)
1973	0.46	120.9	202.8	265.1	150.1	209.1	329.3
1974	0.53	146.3	245.4	278.1	185.2	258.0	352.1
1975	0.58	136.8	229.5	235.0	183.1	255.0	314.5
1976	0.61	144.8	243.0	238.2	189.0	263.3	310.9
1977	0.65	154.3	258.9	238.4	205.7	286.6	318.0
1978	0.70	193.8	325.3	277.7	256.3	357.0	367.2
1979	0.78	215.2	361.1	277.4	284.9	396.9	367.1
1980	0.88	225.2	377.9	255.9	345.6	481.5	392.8
1981	0.96	224.3	376.4	233.4	316.1	440.4	329.0
1982	1.00	213.7	358.5	213.7	308.5	429.7	308.5
1983	1.02	222.7	373.6	219.2	327.6	456.3	322.4
1984	1.04	253.2	424.9	244.2	359.4	500.6	346.6
1985	1.05	223.9	375.8	213.9	301.6	420.1	288.0
1986	1.03	241.5	405.2	234.0	349.2	486.5	338.4
1987	1.05	273.5	459.0	259.5	370.0	515.5	351.1
1988	1.08	281.5	472.3	260.6	386.2	538.0	357.6
1989	1.14	308.1	517.0	271.2	456.0	635.2	401.4
1990	1.19	311.8	523.3	261.6	447.2	622.9	375.1
1991	1.22	289.0	484.9	237.5	405.1	564.3	332.8
1992	1.23	318.1	533.8	258.2	470.8	655.9	382.2
1993	1.25	383.3	643.1	307.4	553.6	771.2	443.9
1994	1.26	394.7	662.2	314.5	570.2	794.3	454.3
1995	1.28	379.9	637.4	297.0	504.2	702.3	394.2
1996	1.31	364.9	612.4	277.9	562.0	782.9	428.0
1997	1.32	384.4	645.0	291.6	499.6	695.9	379.1
1998	1.31	418.9	702.9	320.5	557.9	777.1	426.8
1999	1.33	417.8	701.1	314.2	589.4	821.1	443.2
2000	1.38	465.1	780.4	337.0	701.7	977.5	508.5
2001	1.41	423.8	711.1	301.2	607.0	845.6	431.4
2002	1.39	442.8	743.1	318.8	629.6	877.1	453.3
2003	1.43	467.9	785.1	326.5	635.0	884.6	443.1
2004	1.49	489.6	821.5	329.7	703.9	980.5	474.0
2005	1.56	491.0	823.8	315.3	703.4	979.8	451.8
2006	1.60	496.0	832.3	309.3	731.5	1019.1	456.1
2007	1.67	462.1	775.5	277.4	630.6	878.4	378.5
2008	1.77	484.0	812.1	273.3	732.9	1020.9	413.8
2009	1.73	393.1	659.7	227.9	576.7	803.3	334.3
2010	1.80	451.8	758.1	251.3	659.7	919.0	366.9
2011	1.91	428.3	718.7	224.8	620.2	864.0	325.6
2012	1.94	418.1	701.5	215.3	548.1	763.6	282.3
2013	1.98	496.5	833.1	250.6	755.5	1052.4	381.4
2014	2.01	575.1	965.0	286.8	825.9	1150.5	411.9
2015	1.93	535.1	897.9	277.7	722.9	1007.0	375.1
2016	1.82	559.0	938.1	306.5	822.7	1146.0	451.0

Figure 4. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2016.

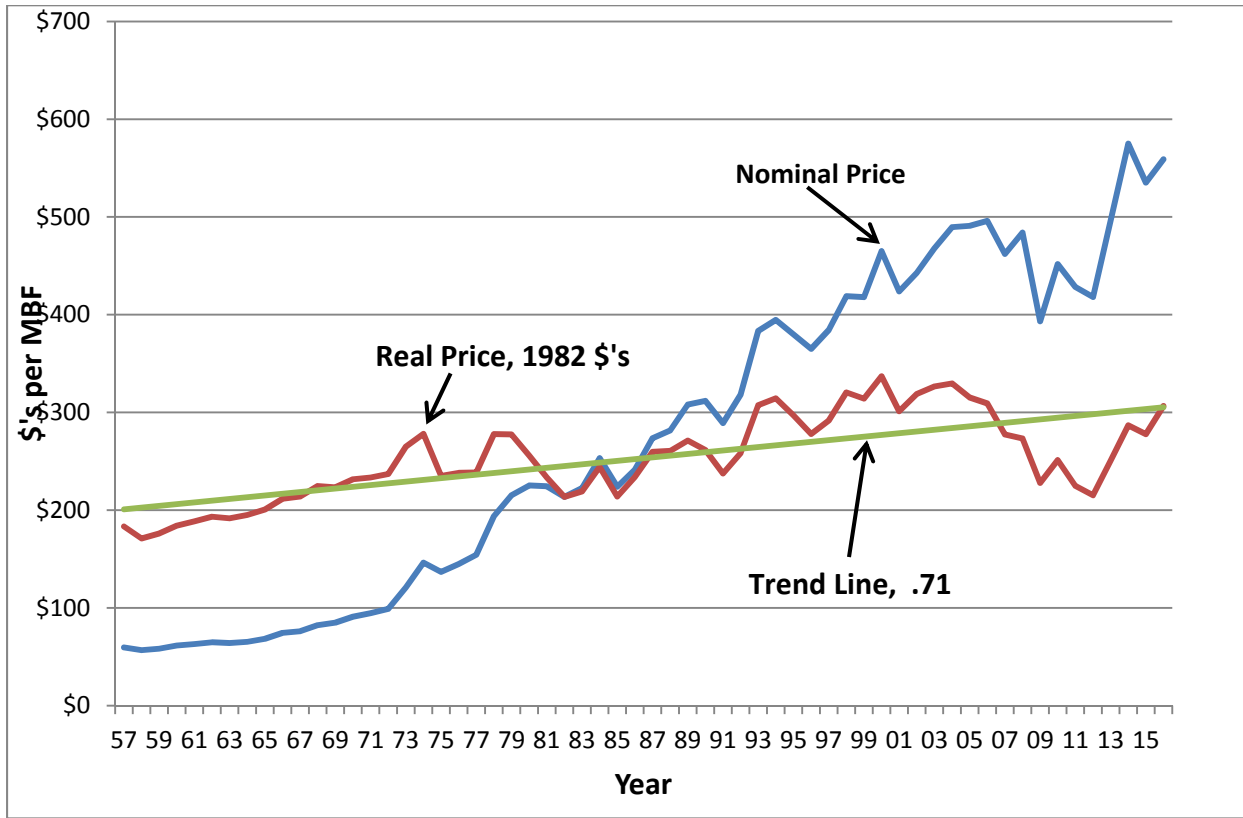


Figure 5. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2016.

