



Notes on Red Oak

Introduction

While the majority of institutional timberland investor focus on softwoods, hardwoods are an important component of timberland investments in a few areas. Eucalyptus plantations are big in some parts of South America and naturally-regenerated mixed-hardwood forests are common throughout the Eastern United States. Even southern pine investments in the US South contain important components of hardwoods (see *Non-Pine Lands in Pine Investments*, Forest Research Note v10 n4).

Within the Eastern US hardwood forest, oak is a major component. The North American oaks fall into two major groups: red and white. Each group contains dozens of species. A major distinction between the two groups is that the pores in the white oaks are plugged, while those in the red oak group are not. Barrels made with white oak will not leak, while barrels made with red oak will constantly seep wine (or whiskey).

Utilization

Hardwoods, including red oak, are less dependent on US housing than are softwoods. Red oak goes into flooring and, depending on consumer demand, furniture, moulding and millworks, and cabinets. It also is used in truck trailer beds, railroad ties (sleepers for our international readers), pallets, and commercial furniture and fittings.

Forest Resource

Data from the US Forest Service’s Forest Inventory and Analysis group shows that red oak is a very prominent species group in Eastern US forests.

There are at least 15 red oak species of commercial value in the region. Table 1 shows red oak sawtimber volumes for the 33 states east of the Great Plains. They make up nearly a quarter of the

standing inventory, growth and harvest of hardwoods in the region. They also make up nearly 15 percent of the total standing inventory, but only 10 percent of the growth and removals (we suppose this is due to the intensive silviculture applied to southern pines, which would boost their growth rates and allow more harvesting).

Table 1. Red Oak Sawtimber Tree Inventory, Growth and Harvest Removals

Species	Standing Inventory (MMBF)	Growth (MMBF)	Removals (MMBF)
Red Oaks	308,901	8,501	3,899
Other Hardwoods	1,032,997	29,576	12,210
Softwood	793,655	43,826	22,605
Total	2,135,553	81,903	38,714
Red Oaks as % of Hardwoods	23.02%	22.33%	24.20%
Red Oaks as % of Total	14.46%	10.38%	10.07%

Source: USFS Forest Inventory & Analysis

Stumpage Prices

Red oak stumpage prices are available for most states east of the Great Plains. Timber Mart North provides them for Michigan, Minnesota and Wisconsin. Most of the rest of the eastern states have forestry or tax departments or universities that publish red oak prices. Timber Mart South (TMS) currently publishes *oak* prices for 11 states. (We did a *very* quick check in TMS’s species detail report and found the red and white oak prices are very similar).

One of the challenges in comparing stumpage prices among reports is that hardwood sawtimber stumpage prices are reported in different log scales. Some reports show prices in terms of International ¼” (Intl ¼”), but others report prices in terms of the Doyle or Scribner log scale. (Missouri uses Intl ¼” for one price region and Doyle for the other. New York uses all three for different parts of the state.) The problem is in converting all the prices to one log rule. Both Timber Mart-South and the Pennsylvania Cooperative Extension Service

provide factors for converting Doyle and Scribner prices to Intl 1/4"—but the conversion factors are different. On top of that, the conversion factors actually change with the size of the log.

Figure 1 compares sawtimber prices for most of the eastern states. It is difficult to pick out many of the individual states, but there are some observations that can be made. The highest prices are from Pennsylvania and the lowest are from Florida. The prices from most of the southern states fall within a band that is about \$100/MBF wide, while prices for all the northern states are generally above that band.

Why are the southern red oak prices lower than northern prices? It is possible that the conversion process understates the Intl 1/4" price, but a quick look at some hardwood lumber company web sites found that northern red oaks produce higher value lumber than southern red oaks (see Lumber below). Their slower growth produces tighter grain and a more uniform color.

Table 2 shows the correlation coefficients for the prices in Figure 1. The red cells show negative coefficients, all from Michigan and West Virginia when compared to the southern states. The green cells show positive coefficients greater than 0.50.

Prices from the southern states are all strongly correlated with each other. The northeastern states show strong correlations, and New York and Pennsylvania are strongly correlated with the southern states, but the Lake States and Missouri show a wide range of numbers.

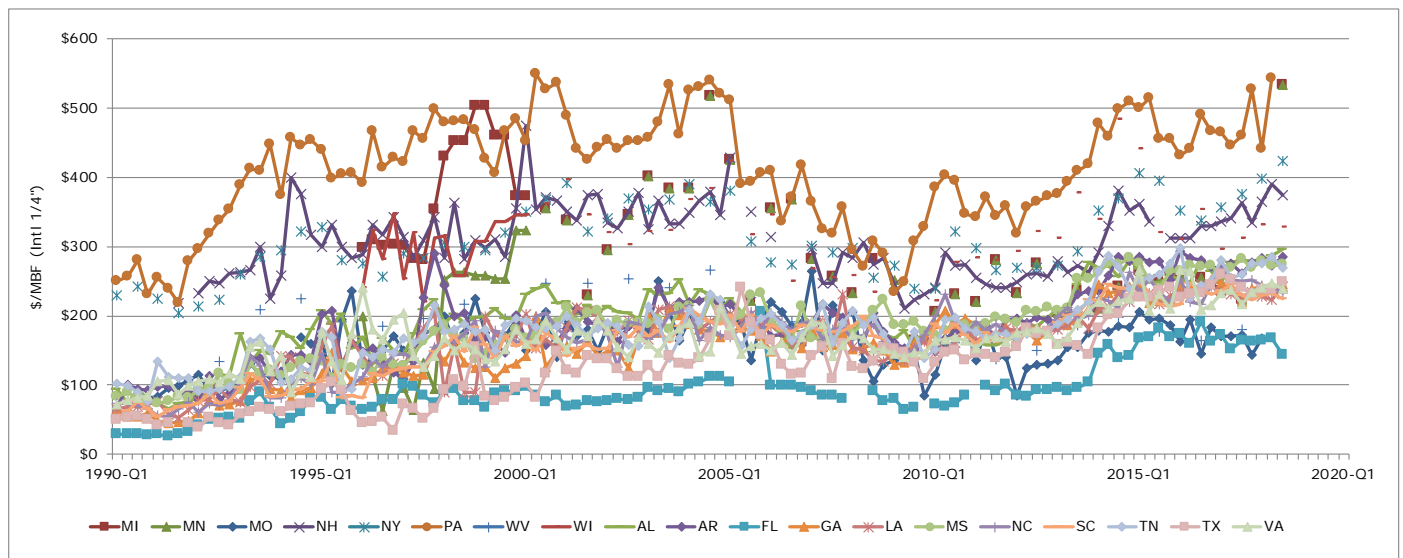
Lumber Prices

We looked at lumber prices from two reporting services, and found their numbers to be similar enough that we could average them for forest economics work. Figure 2 shows kiln-dried prices for the highest lumber grade (FAS) and green prices for a middle lumber grade (#1 common) for the three lumber price reporting regions. The series are very strongly correlated with each other. The chart also shows that lumber from the North fetches the highest prices, while the Southern red oak lumber prices are lower.

Stumpage and Lumber

Figures 3 and 4 show stumpage and lumber prices for the North and South, with correlation coefficients shown in Table 3. Stumpage prices in Michigan, Minnesota and Florida are weakly correlated with lumber prices in their region, while the relationship is much stronger for the other states.

Figure 1. Red Oak Sawtimber Stumpage Prices (nominal \$/MBF Intl 1/4")



Sources: Timber Mart North, New Hampshire Timberland Owners Association, New York Division of Lands and Forests, Missouri Department of Conservation, West Virginia Division of Forestry, Timber Mart-South

Table 2. Correlation Coefficients for Sawtimber Stumpage Prices

	MI	MN	MO	NH	NY	PA	WV	WI	AL	AR	FL	GA	LA	MS	NC	SC	TN	TX	VA
MI	1.0000	0.5350	0.3618	0.3481	0.2983	0.4907	0.5357	0.1886	0.0749	-0.0688	-0.2273	-0.3333	-0.2080	-0.2901	-0.2183	-0.1595	-0.1346	-0.2519	-0.2743
MN		1.0000	0.4666	0.3959	0.5566	0.2883	0.5193	0.3663	0.4136	0.2555	0.1487	0.2927	0.3353	0.3154	0.3498	0.3991	0.2387	0.3867	0.3913
MO			1.0000	0.4657	0.6286	0.5469	0.5349	0.3008	0.5339	0.4933	0.4203	0.4489	0.5136	0.4254	0.4876	0.5018	0.4370	0.3544	0.3913
NH				1.0000	0.7826	0.7384	0.7932	0.6089	0.5741	0.4103	0.3685	0.2895	0.4674	0.3274	0.3317	0.3480	0.3854	0.2363	0.3250
NY					1.0000	0.8194	0.5992	0.6808	0.8604	0.7582	0.6945	0.6873	0.7617	0.7118	0.7073	0.6902	0.7227	0.6492	0.6813
PA						1.0000	0.7316	0.6133	0.7345	0.5806	0.5458	0.5055	0.5534	0.4917	0.5273	0.5014	0.5447	0.3390	0.5278
WV							1.0000	0.4057	0.3185	0.0948	-0.0790	-0.0837	0.1613	-0.0073	0.1253	0.0266	-0.0025	-0.0431	-0.0116
WI								1.0000	0.5512	0.3761	0.3380	0.3087	0.4627	0.4407	0.3010	0.4340	0.3842	0.3256	0.3272
AL									1.0000	0.8689	0.7938	0.8478	0.8522	0.8693	0.8218	0.8404	0.8325	0.7574	0.7618
AR										1.0000	0.8271	0.8741	0.8596	0.8823	0.8297	0.8678	0.8798	0.8175	0.7878
FL											1.0000	0.8457	0.7772	0.8654	0.8157	0.8335	0.8643	0.8468	0.8018
GA												1.0000	0.8665	0.9273	0.9210	0.9308	0.8674	0.8839	0.8159
LA													1.0000	0.8578	0.8176	0.7998	0.7960	0.7529	
MS														1.0000	0.9104	0.9309	0.8838	0.9009	0.8041
NC															1.0000	0.9332	0.8584	0.8549	0.8081
SC																1.0000	0.8840	0.8834	0.7888
TN																	1.0000	0.8265	0.8306
TX																		1.0000	0.7397
VA																			1.0000

Figure 2. Red Oak Lumber Prices by Region (nominal \$/MBF)

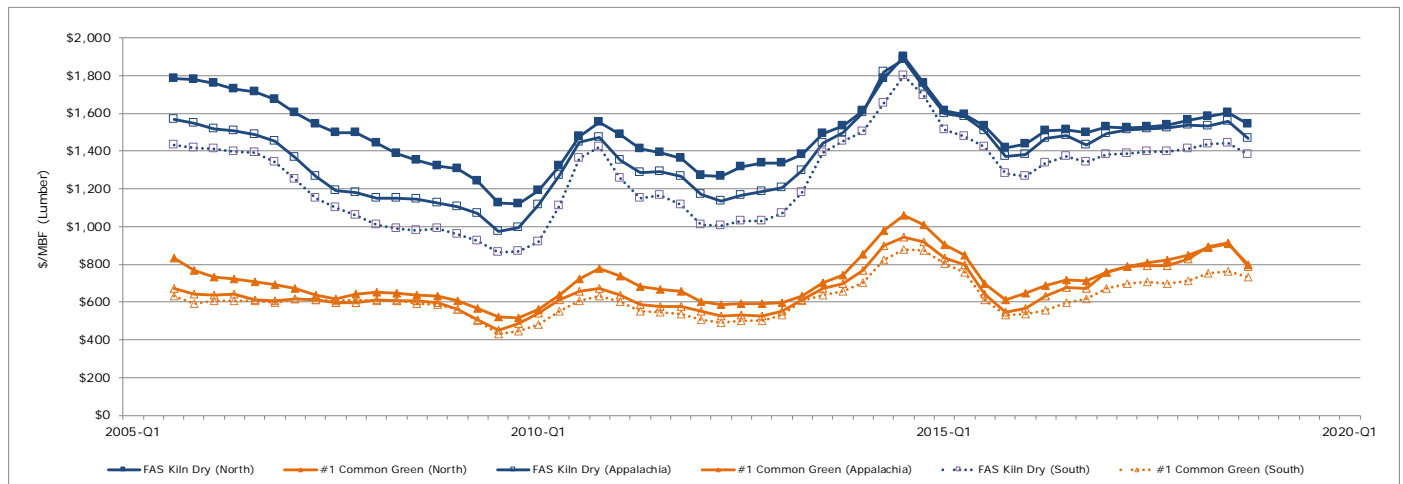
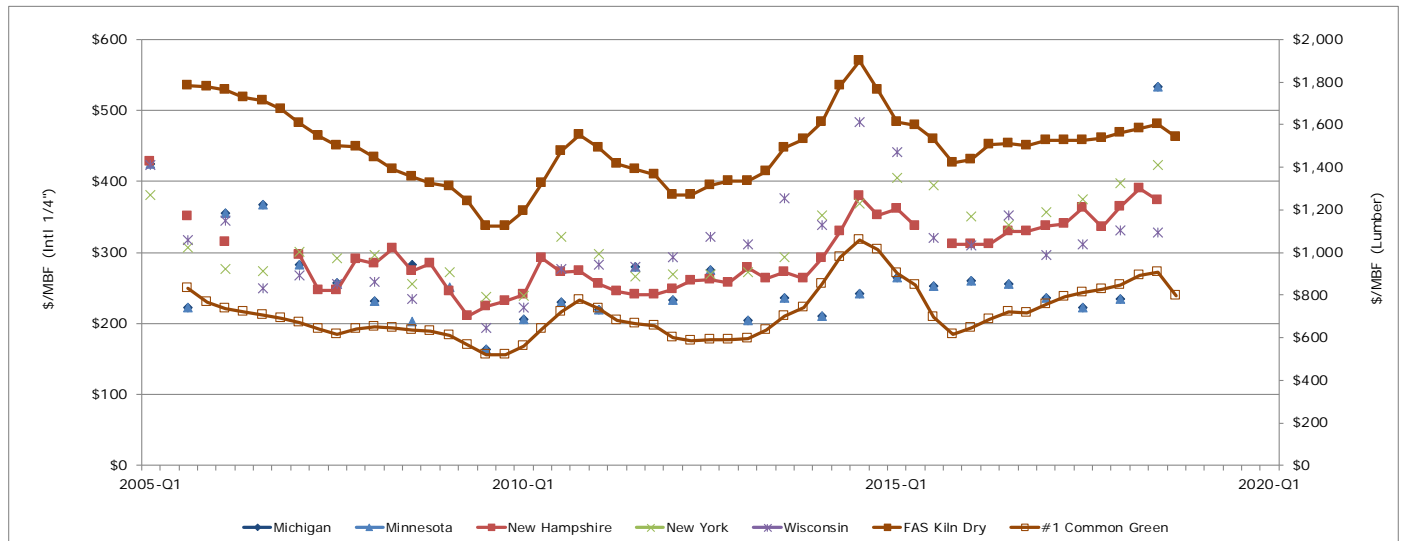


Figure 3. Red Oak in the North

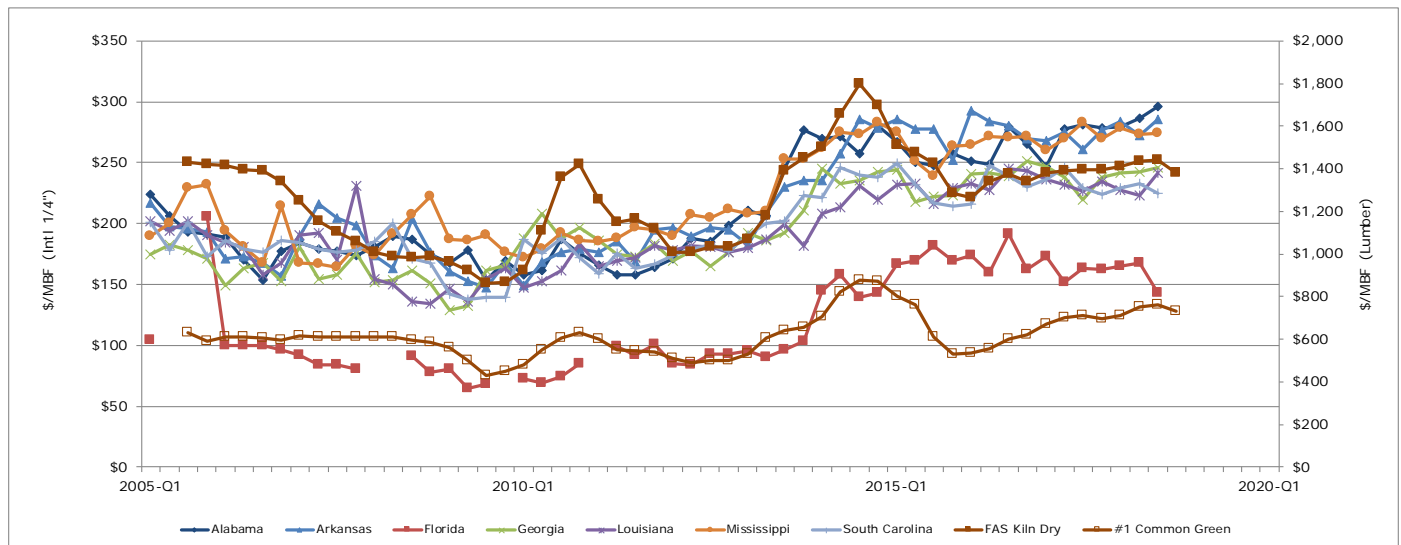


Sources: Timber Mart North, New Hampshire Timberland Owners Association, New York Division of Lands and Forests, Hardwood Market Report, Hardwood Review Weekly

Table 3. Correlation Coefficients for Sawtimber Stumpage Prices and Lumber Prices in the North and South

	FAS Kiln Dry	#1 Common		FAS Kiln Dry	#1 Common Green
Michigan	0.3651	0.2802	Alabama	0.6870	0.6882
Minnesota	0.3931	0.3061	Arkansas	0.6736	0.6611
New Hampshire	0.7316	0.8055	Florida	0.6640	0.5223
New York	0.5380	0.7701	Georgia	0.6812	0.5982
Wisconsin	0.6251	0.7674	Louisiana	0.6818	0.5835
			Mississippi	0.6850	0.6359
			South Carolina	0.7535	0.7312

Figure 4. Red Oak in the South



Sources: *Timber Mart-South, Hardwood Market Report, Hardwood Review Weekly*

Summary

The red oaks are an important component of forests in the eastern United States. They make up nearly a quarter of the standing inventory of hardwoods. They are also one of the more valuable species. With some exceptions, red oak stumpage prices are correlated across states. Stumpage prices in most states are generally strongly, but not perfectly, correlated with lumber prices

Forest Research Notes, Vol. 15, No. 4
Copyright © 2019, Jack Lutz

Jack Lutz, PhD
Forest Economist
Forest Research Group
78 Stonybrook Way
Hermon, ME 04401
(207) 605-0037

jlutz@forestresearchgroup.com