PRUNED PINE

CLEAR OPPORTUNITIES FOR NEW ZEALAND WOOD PRODUCTS?

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PRUNED PINE FORESTS OF THE SOUTHERN UNITED STATES

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Introduction

The United States has a vast forest resource in the Southern Region comprised of Southern Yellow Pine (SYP) and Hardwood trees. [1] Approximately 214 million acres (86.6 million ha), which is about 40% of the US forestlands, are in the South Region. The South grows 22% of the US softwood fiber and equally impressive is annually from 1996 forward, the South harvests 10 billion board feet (23.6 million m³) of wood.

Commodity Lumber and Plywood comprise the majority of products manufactured in the U.S. South mainly from loblolly, slash, longleaf and shortleaf Yellow Pines, although more appearance products are being produced using pruned Loblolly Pine (*Pinus Taeda*). Timber companies operating forest plantations in the South are investing more focus on this species to generate a higher return of clear fiber.

SYP Background in the U.S.

[2] The native range of SYP in the U.S. includes 14 states beginning with the southern tip of New Jersey extending south to central Florida and then west to eastern Texas. The species included in this range are;
Longleaf Pine (*Pinus palustris*)
Slash Pine (*Pinus elliotti*)
Shortleaf Pine (*Pinus echinata*)
Loblolly Pine (*Pinus taeda*)
[3] These four species make up approximately 90% of the southern pine timber inventory in the south.
Loblolly pine is currently the dominant species on about [4] 29 million acres (11.7 million ha), this makes up about 50% of the entire standing pine timber inventory in the U.S. South. Historically SYP timber has been produced into Dimension Lumber, 2x4 thru 2x12, Timbers 4x4 thru 8x8 and Plywood ¼” thru ¾” 4x8 sheets.

SYP Production in the U.S.

In 1960 annual Southern Pine lumber production was [5] 5.7 Billion BF (13.5 million m³). In 1980 the production volume grew to 8.2 Billion BF (19.4 million m³). In the year 2000 the production volume more than doubled to 16.6 Billion BF (39.2 million m³) and this was not the highest the volume had achieved. In 1999, the U.S. South recorded a lumber production volume of 16.9 Billion BF (39.9 million m³).

In 2002 the volume of Southern Pine lumber production was recorded at [5] 16.5 Billion BF (38.9 million m³) and production volume estimate for 2003 is pegged at 16.8 Billion BF (39.7 million m³). The volume has been fairly consistent since about 1997 as you can see. Another statistical analysis can be made to show the importance and market presence of SYP by comparing the total Softwood Lumber production and consumption figures with total U.S. Softwood figures.
Looking at 2001 only, total SYP production was [5] 16.048 Billion BF (37.88 million m³), total U.S. Softwood production, including SYP was 34.877 Billion BF (82.32 million m³), and so 46% of the total US Softwood production is comprised of Southern Pine products. If
we compare this to the total U.S. Softwood Consumption figures for 2001, here are the results. Total U.S. Softwood Consumption, including imports, is 54.762 Billion BF (129.25 million m³), using the SYP figure of 16.048 Billion BF production, 29.3% of total US Softwood Consumption is made up of SYP products. I realize this is a lot of numbers but they are very relevant to our discussion about where the U.S. South stands when relative to production and products consumed within the U.S.

[6] Historically Southern Pine production, as with most other domestic U.S. species, was always heavy to 1” products. Specifically boards in 4” to 6” and even wider, these items were used as sheathing items. These sheathing items were used in home construction as roof and wall sheathing; this means of building was the norm in the U.S. up till about the late 1950’s. In the late 1950’s and early 1960’s the introduction of plywood began to replace boards as a staple to roof and wall sheathing due to lower labor costs. Southern Pine producers had to move from almost 70% board production to 70%+ dimension production to survive and continue supplying the home building industry. Due to its strength properties, Southern Pine is the choice specie for component manufactures of roof and floor trusses, both residential and commercial. To compare Southern Pine to Hem-Fir using 2”to 4” thick by 2” and wider, Select Structural Grade, MC 19% or less.

[7]

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<th>Extreme Fiber Stress in Bending/Single Member</th>
<th>Tension Parallel to Grain</th>
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Treated SYP in the U.S.

Southern Pine is also the preferred specie for water-borne treatment plants in the U.S. Whether the treatment process is CCA based or non copper based (ACQ), the production trend for the past 10 years has been increasing. [8] In 1993 treated production was just above 5.08 Billion BF (11.9 million m³), 2002 treated production finished out at 7.29 Billion BF (17.21 million m³).

Treated products in the U.S. are viewed in an appearance way to the general public, how many times have we all been in a major retail chain lumber store and witnessed the average “Joe Homeowner” flipping through a unit of 2x4’s looking for the best ones? And making sure the 4x4’s are straight and have no knots since these will be used as deck posts for his rails?

This method of purchasing by the general public has and is putting increased pressure on treating plants to procure their white lumber needs from mills that are active in improving grade results through the sawmill. Treating plant purchasing departments are constantly looking at a mills grade performance as well as prompt deliveries to ensure the treating plant
is not falling behind schedule. Strength properties are not on the top of the buying list due to a majority of the wood treated in the U.S. is of a #2 common grade in almost all products also most residential projects do not require load specifications. Depending on state and local building code requirements, most states do require a building permit on outside structures such as decks attached to homes, so any building concerns or questions are usually handled by a local inspector.

What we are seeing within the treating industry has been a switch to purchasing white lumber from mills that have a history of producing visually appealing lumber. The Prime grade out of the South has been gaining popularity over the past 5 years with mainly the Home Center segment. Sawmills originally pulled the better of their #2 production out and marked the lumber #2 Prime, leaving the balance of #2 to be sold to contractor type yards where quality complaints began to rise. To bring the number of complaints down, some sawmills began to cut thicker cants to actually produce a #2 Prime product, mills that could not afford to make this sawmill change just simply improved their normal grading procedures and focused on #2 production. Mills that cut thicker cants needed a better grade of log to be able to do both runs which may be one reason why the U.S. South timber companies had to devise a plan to improve the quality of log coming out of the forests.

**Emergence and Demise of Southern Pine**

Use of Southern Pine in the U.S. for moulding and millwork products dates back to the early 1900’s, along with Douglas Fir, Ponderosa Pine and other western white pines, together these were the dominant species for millwork production. Up until about the 1960’s when some of these species began to deplete and logs were being used for the new product of the future, *Plywood*, Southern Pine was an acceptable specie for Doors, Windows, Mouldings and Industrial products like Jamb parts, Sash parts and Flooring. One hundred year old homes with Southern pine window and door parts, interior plank and tongue and groove flooring along with interior paneling and wainscoting, these homes all still function very well and look beautiful. A tried and true testament of the durability, strength and quality of southern pine appearance wood products.

When Plywood began to replace the staple 1x4 and 1x6 sheathing items, log supply changed and moved to high volume harvesting, clear cutting and quickly the Southern pines were loosing their high value status. Big volume sawmills in the South had huge appetites for pine trees, one of the biggest sawmills in the south and at one time in the U.S., had a reported daily production volume of [10] 800MBF, using 20 day months X 12 = 192 Million BF per year of Southern pine lumber production reported in 1997, so you can see how quickly trees were eaten up by some of these big mills. Forest harvests were increased to meet this demand, ages of trees were reduced, and size of trees diminished and thus only became useful for dimension lumber items and panel production.

Now with huge volumes coming from Canada to supply the commodity dimension lumber items, the design of OSB which is replacing plywood in some markets and also Engineered Wood Products such as I Joists and LVL Beams which are also replacing traditional joist and beam items as 2x10’s and 2x12’s in all species. Southern Pine forests have been given the opportunity to “grow” again due to the higher usage of these alternate species and products. [11] In the period from 1992 to about 1999, production of S2S and S4S Moulding Grade 5/4
Southern Pine Lumber went from almost zero to about 20 Million BF (47,200 m³). The norm for this period seems to be around 15 Million BF (35,400 m³). The height of the past 10 years was 2000, about 43.8 Million BF (103,375 m³) of Clear Pine was produced in the South U.S., this Clear Pine included S2S and S4S Moulding, Shop 2&3 and also some Clear #1, mainly in 5/4 thickness. Since this time period the U.S. South has seen an exiting of the handful of forest companies involved in processing clear pine in the South. Of the four major forest products companies’ producing these products only one small mill currently still produces some of these clear pine products at this time. The root cause of the demise is due to alternative imported species and economics.

Imports have made a huge impact on the Southern Pine industrial markets since 1990. U.S. Softwood Imports in 1990 totaled 12.15 Billion BF (28.68 million m³), 2002 imports totaled 20.82 Billion BF (49.14 million m³). These totals include all wood products imported by the U.S. including Canada. Historically Canada is about 30% to 35% of U.S. Softwood consumption, almost all of this is in the form of construction grade lumber, and virtually none of the products from Canada are appearance in nature or for the U.S. appearance wood market. Since 1999 Softwood Imports have risen while Southern Pine production has declined, as well as total Softwood Production has followed this trend. Economics have also played a role in the demise of Southern Pine clear wood production. Simply put the relative price between dimension grade commodity lumber and clear industrial grade lumber did not justify the costs of manufacturing involved with producing clear industrial grades. Also the by-products produced did not garner a high enough return in the market place to make up any difference, so getting orders for these products often came at steep discounts. The only winners in this time frame were the importers who were able to step in and take market share. Yields of the low grade compared to high grade were too close, root cause was during this time mills were using non pruned or partial pruned logs from Southern forests, they could not compete with the pruned forests of the Southern Hemisphere…so the South exited this market arena.

The re-Emergence of Southern Pine

[14] Southern forest owners have been pruning standing southern pine trees since the early 1960’s. This was done mainly to grow poles for commercial applications; light poles, telephone poles, docks and pier poles for the treating industry. Normally pruning was not a common practice for most of the U.S. South, even though the pricing advantage was apparent as consumers paid premiums for better lumber grades in the West. The South has an obvious opportunity to realize higher returns for pruned pine, based in part to the stability of integrated forest products companies; this can be done by early pruning of fast growing species like Loblolly pine (pinus taeda) and also improved drying techniques. The key to producing high quality, stable Southern pine lumber is drying. Outfitting these mills with specially designed kilns that allow lumber to dry on a computer controlled, extended cycle at lower temperatures is the key. Also incorporating steam conditioning during the drying process helps to produce a dimensionally stable product with almost a defect free surface, keep in mind that not only technology is needed but also a good human eye. There is no substitute for a well trained, skilled dry end employee operating the kilns.
Several key target millwork companies in the south that have made the switch to pruned southern pine have had good success and customer acceptance of their products. These companies know they have a high quality product and are not too keen about ‘letting the cat out of the bag’. A bit of selfishness is prevalent here among these customers, they certainly feel they know a good thing when they see it…Pruned Southern Pine seems to be it.

Most companies have different views on how and when to prune their plantations, some suggest pruning loblolly as early as age [14]5-7 years and a second pruning at age 10-12 years, thinning in between and final harvest at age 45.

Another regimen for pruning loblolly pine plantations is to do a first prune at age 15 at 15-17 feet and on occasion a second stage prune at 25 feet is also used. Once the forest is thinned, the trees are allowed to grow to harvest age 30-35 years. The thinking here is to produce the best clear wood on the shortest rotation possible, obviously high quality seedlings are needed to start the whole process and create a finish product of superior appearance and quality to hopefully command a higher monetary return to the mill and forest.

Currently there are only a couple of integrated forest products companies that are continuing to practice pruning their pine plantations on a routine basis. This type of pruning is costly for smaller private landowners and family investments. The only way for these forests to benefit from the pruning is for the market to recognize this and pay a premium for these pruned trees. In this case a buyer hopefully is identified before intensive pruning begins, if not this could be costly for the owner.

Integrated forest companies can include the costs of intensive pruning back to mill production costs and also have the ability to market these products among a broader range of items. This gives a large forest product company the ability to sell their products to different market segments and thus enjoy the higher returns on their pruned forests.

Future Success of Pruned Pine?

As with any investment, monetary return at time of the sale is KING! Pruning, thinning, mill changes, kiln upgrades are all investments a forest company can make to hopefully see higher returns for the pruned pine.

Will the U.S. market pay a premium for pruned southern pine? This could be the $64,000 question. Clearly the quality of product produced in the south U.S. is not in question; the south has a long standing reputation of producing high end industrial lumber. The U.S. reman plants have also accepted the qualities of southern pine. Door and Window companies have tested and most use southern pine in their normal production lines, a major benefit is lead time as compared to import products. Normal import arrival times range from 60-90 days to a U.S. port, in today’s market climate that wait is better explained as 60-90 days before vessel departure from origin country, adding another 20-30 days of water time.

Consumers have accepted southern pine as a clear fiber alternative to imports, including Radiata pine and other pine species from southern hemisphere producing countries. These marketing issues do not present any road blocks to selling pruned pine from the south U.S. What the South faces as major challenges of clear/pruned pine in the future is of economic viability. Can the south market this product as Clear Pruned Pine Industrial Lumber? Or will these companies struggle to get a premium? If the latter becomes the norm then you will see forest product companies move this inventory into other items like decking and clear finished boards. The problem could be the relative price point of clear pruned pine industrial products versus other products that can be manufactured using this inventory. Also the pricing of clear
fiber in the world markets, more and more companies/countries are looking at supplying the U.S. with clear wood. The world wood basket is big and could get bigger as these younger forests mature, possibly driving the price of clear wood lower. Substitute products may also have an impact on clear wood opportunities, products like MDF do not currently experience the volatile price swings seen in the solid wood markets.

**Conclusion**

Pruning Southern Pine forests in the U.S. is not a new development, what is a new development is the apparent strong foot hold the Southern Hemisphere producing countries have developed in the past 10 years. Overcoming this foot hold is a development that the U.S. South will need to challenge in the near future. With a huge resource at their finger tips, some of the best forest products companies in the world, the best tree growing knowledge and manufacturing environments in any country, we must conclude that the U.S. South should be a force to be reckoned with as it pertains to Pruned Southern Pine.

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