



## A Brief History of Pulpwood in the South -- Update

We have looked at pulp mill capacity and pulpwood production delivered to pulp mills in the US South in three previous Forest Research Notes. In this issue we provide another update with nine additional years of data available.

### Mill Capacity and Pulpwood Production

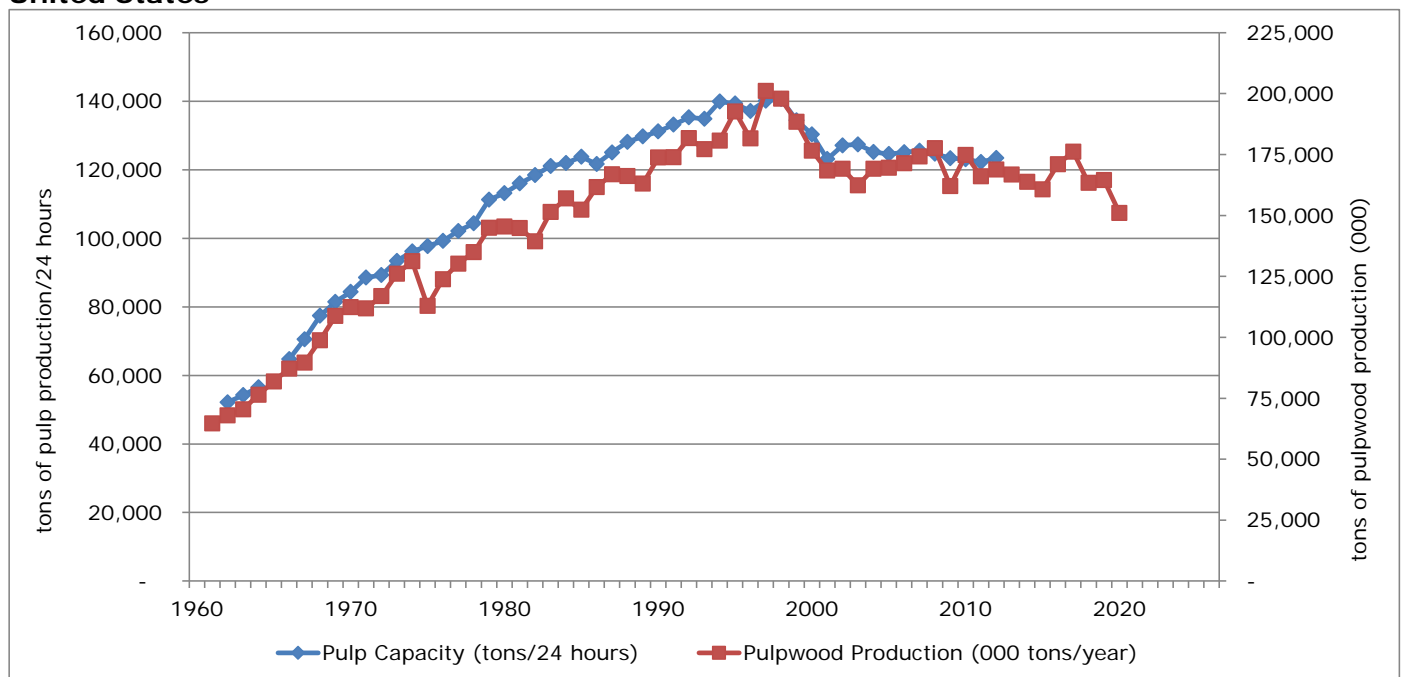
Figure 1 compares pulp mill capacity and pulpwood production across the South from the early 1960s through 2020. Until 2012, the USFS reported pulp capacity (blue line) in terms of tons per 24 hours. The red line shows thousands of tons of “pulpwood” produced per year. This volume consists of roundwood and residues.

Mill capacity dropped sharply between 1988 and 2000, recovered a little in 2001 and declined slowly but steadily from 127,000 tons per day in 2002 to 123,000 tons per day in 2012 (a decline of about 0.3 percent annually).

Pulpwood production hovered around 170 million tons per year between 2000 and 2019. Production dropped in 2020—probably in part because of the coronavirus pandemic.

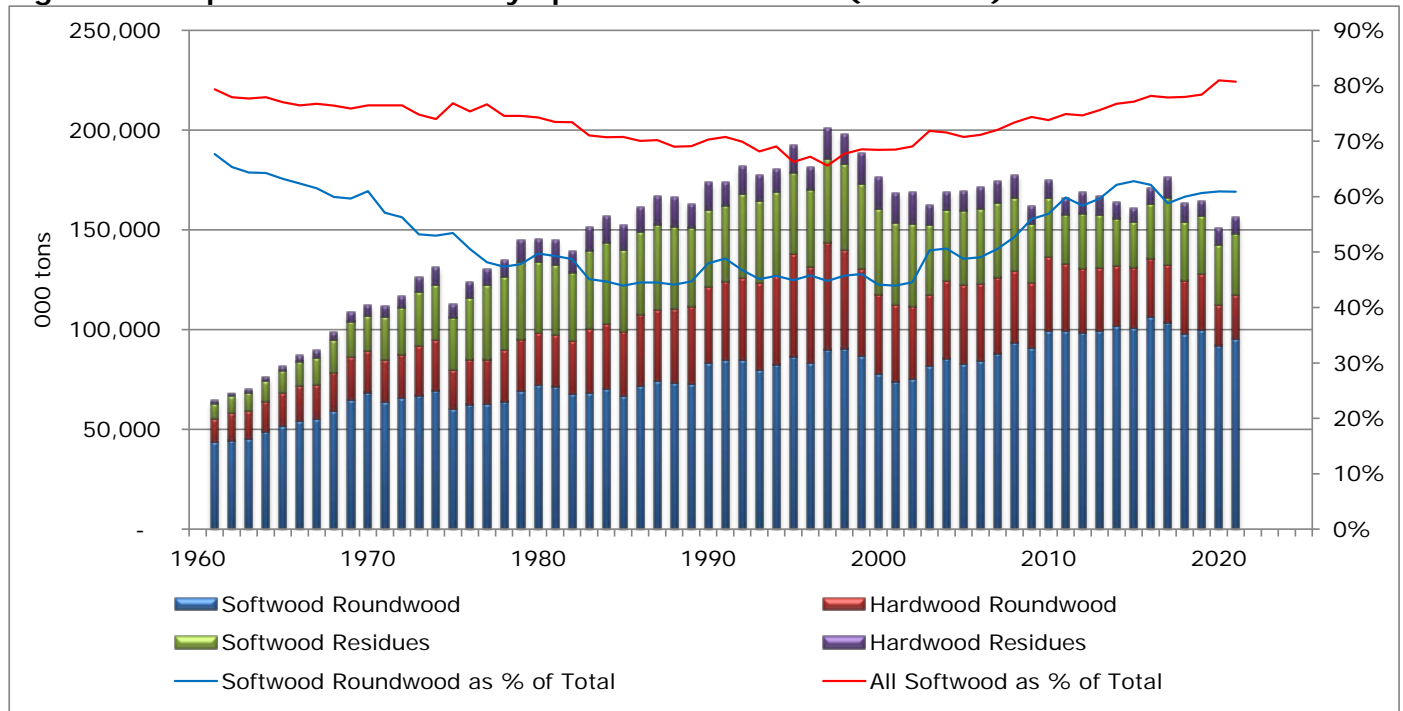
The two data series are highly correlated (0.98), but are not identical because the blue line shows pulp mill *capacity*, not pulp production or wood consumption. Pulp and paper mills are very expensive (new ones start at around \$1 billion), so they tend to run 24 hours a day with a week or two of scheduled downtime for maintenance each year. But there are times when they don’t operate at full capacity. They may even close down a pulp line and paper machine for a few weeks when prices for their paper or paperboard are lower than they like, or when lines or machines are upgraded or converted to produce another paper or paperboard type.

**Figure 1. Pulp Capacity and Pulpwood Production Delivered to Pulp Mills in the Southern United States**



Source: USDA Forest Service

Figure 2. Pulpwood Production by Species and Product (mm tons)



Source: USDA Forest Service

**Pulpwood Components**

The USFS breaks down the pulpwood production by species and product. The mix of roundwood vs. residues has changed a little over the years (Figure 2). The annual volume of softwood roundwood generally increased through the late 1990s, but fell steadily as a percent of total pulpwood production from 67 percent in the early 1960s to about 45 percent of the pulpwood volume from the mid-1980s to the mid-2000s. It is now back to 60 percent.

Softwood chips increased from about 10 percent of the supply in 1961 to 20-25 percent by the late 1970s. Some of this increase would have come from the development of chip-n-saw mills, which diverted some “pulpwood” volume to lumber production. These small logs would yield one or two 2x4’s and a large volume of pulp chips.

The collapse in housing starts beginning in 2006 shifted the softwood mix in two ways. It reduced the supply of sawmill chips available as lumber production fell and it increased the volume of roundwood available as timberland owners harvested more pulpwood (relative to sawtimber) to generate cash flow.

**Lumber and Chips**

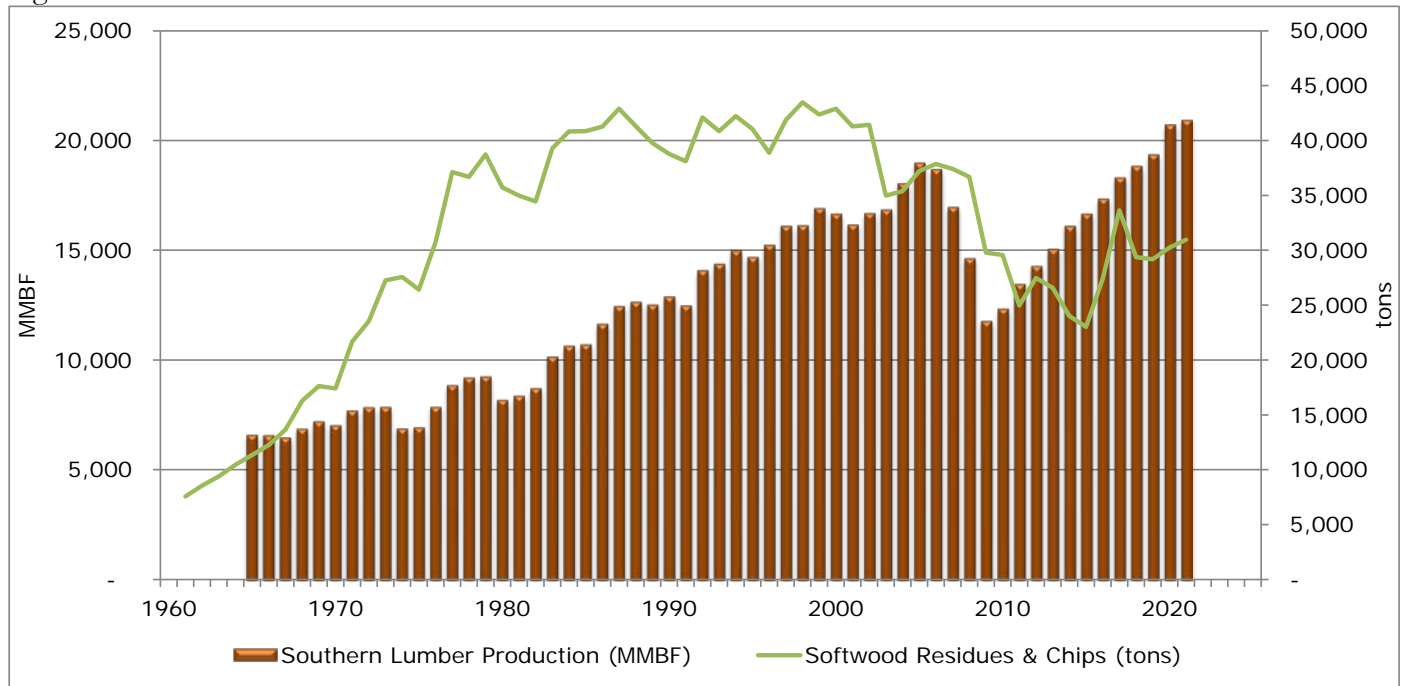
We thought we would find a *very* close relationship between lumber and chip production, but Figure 3 shows a much weaker relationship than we expected. The correlation coefficient the correlation is 0.45 which is strong, but not *very* strong.

The USFS residue and chips volume is primarily residues from sawmills and veneer mills, but also includes material chipped in the woods. Some of the weakness in the relationship is due to that in-woods chipping volume. Some is due to the somewhat flexible relationship between lumber and residue production—when lumber prices are poor, mills will chip more of a log. When lumber prices are strong, mills will try to squeeze a little more lumber out of a log.



Rayonier Advanced Materials mill and chip pile, Fernandina Beach, FL

Figure 3. Lumber and Residue Production



Source: USDA Forest Service, Western Wood Production Association

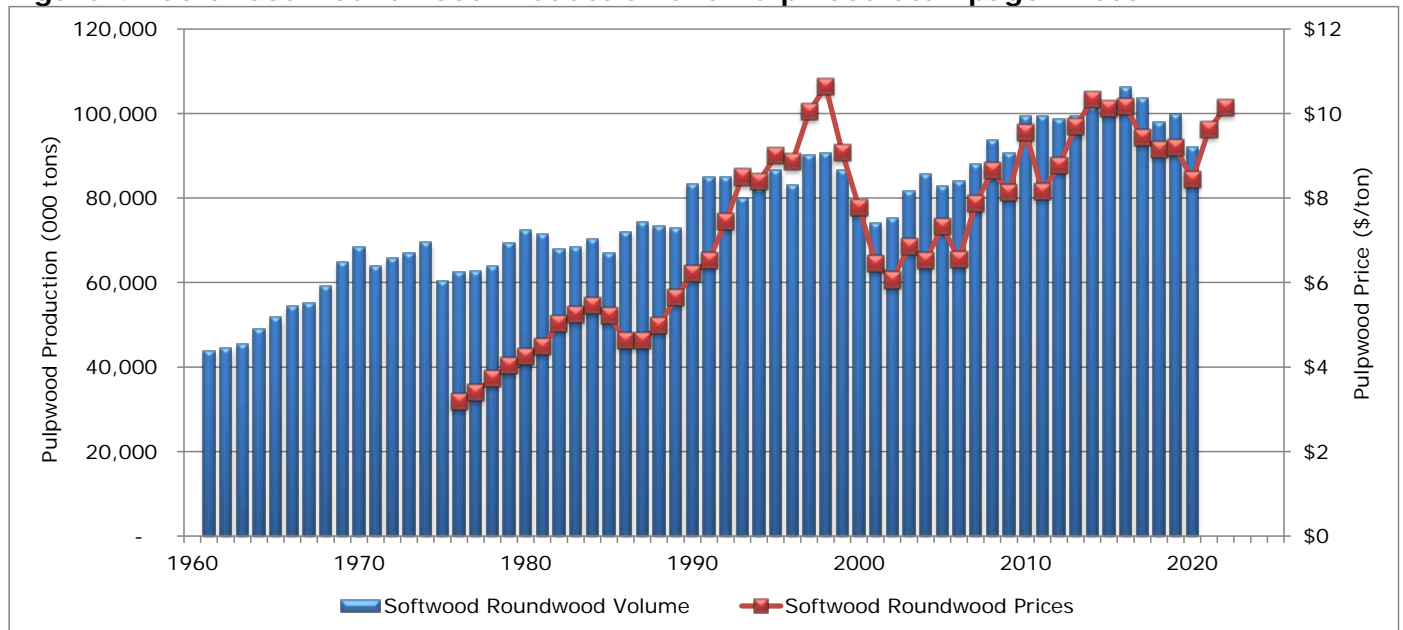
**Roundwood Volumes and Prices**

We saw in Figure 2 that softwood roundwood is an important fiber source for southern pulp mills. It has made up at least 45 percent of the volume delivered to mills since 1961 and has been closer to 60 percent since 2010. Figure 4 shows there *is* a very strong relationship between softwood

roundwood volumes and prices. The correlation coefficient for the two is 0.90.

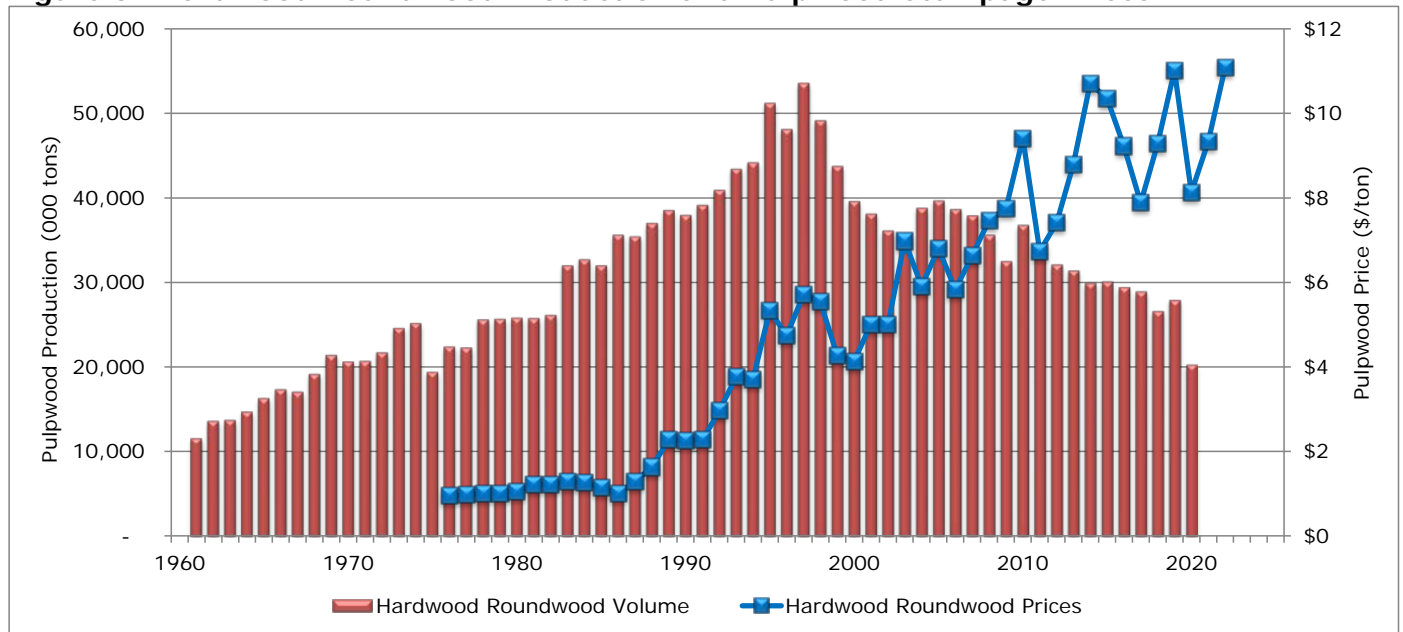
Most southern pulp mills use softwood fiber, but can use a limited amount of hardwood fiber and they use a little hardwood because it has historically been cheaper. That changed in the early 2000s.

Figure 4. Softwood Roundwood Production and Pulpwood Stumpage Prices



Source: USDA Forest Service, Timber Mart-South

Figure 5. Hardwood Roundwood Production and Pulpwood Stumpage Prices



Source: USDA Forest Service, Timber Mart-South

Figure 5 shows hardwood roundwood volumes and stumpage prices. The correlation between the two is 0.0. We note that stumpage prices have been increasing steadily (with some exciting volatility) since the 1980s, but the volume supplied peaked in 1997. Hardwood prices have often exceeded pine prices over the past ten years.

We attribute the change in the volume direction to two factors. First, some hardwood mills have closed as demand for printing and writing papers has fallen. Second, as hardwood fiber prices rose, pine mills would have reduced the amount of hardwood they were using. Pine mills can extract resins and other by-products from pine chips during the pulping process, but hardwoods do not produce any of these. So, the mills would replace a higher-cost fiber that contains no by-products (hardwood) with pine.

**Summary**

Pulpwood consumption in the South has been level for the past 20 years. Volumes dropped in 2020, but it is too early to say whether that was part of a new trend or if it was pandemic-related. We may be able to get a better idea later in 2023 as the Forest Service publishes the volumes for 2021.



Loading a chip car at a sawmill in southern Georgia

Forest Research Notes, Vol. 19, No. 4

Copyright © 2023, Jack Lutz

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

[jlutz@forestresearchgroup.com](mailto:jlutz@forestresearchgroup.com)  
[www.forestresearchgroup.com](http://www.forestresearchgroup.com)