Knock on Wood
East Texas Timberland Production Gets Overhauled

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Timberland became a popular retirement investment vehicle in the 1980s. Purchasers idealized the prospect of buying a piece of land, planting trees, and returning in 30 years to harvest the retirement profits. Today, unattractive timber (unprocessed wood) prices and competition from institutional players have made the passive strategy of the ’80s less realistic and possibly obsolete. Institutional investment in East Texas timber has turned the previously passive wait-and-harvest method into a highly optimized process that maximizes the harvestable timber and minimizes waste. Ninety-two percent of East Texas timberland is privately owned, with 53 percent considered family forest landowners. The remaining 8 percent of Texas timberland is publicly owned by the U.S. Forest Service (572,000 acres), the State of Texas (129,000 acres), and the Department of Defense (173,000 acres). Historically, the region was dominated by wood and paper mill companies acquiring land to supply their mills. From the 1980s into the 1990s as timber prices declined, many of these companies sold off their land, which has since been largely subdivided. Companies such as International Paper, Gibbs Bros., Champion International Corp., and Louisiana-Pacific sold a total of 1.6 million acres during this time (See “Seeing the Forest for the Trees . . . and Streams and Fish and Wildlife,” Tierra Grande, January 2004). Timber investment management organizations bought the majority of the land and managed it for ten to 12 years before selling. Following the economic recession of 2008, demand for lumber (processed wood) for residential building halted and lumber prices declined. Prices recently increased because of demand from the construction industry and the

The Takeaway
When lumber prices dropped after the Great Recession, East Texas' lumber industry overhauled its processes to optimize production and reduce waste.
imposition of a 20 percent duty on imported Canadian lumber in 2016. Imports reduced by about two billion board feet, resulting in an increase in lumber price. The increases were substantial enough to rival labor shortages as homebuilders’ primary cost concern.

Several factors prevented timber prices from continuing price growth. Landowners postponed harvesting timber to avoid lower margins or even selling their timber at a loss. Delaying the harvest resulted in not only the inventory of timber acres increasing but also the size of trees increasing. Today, the oversupply of timber is present throughout the southeastern United States.

Another factor is growers’ contracts with mills. Growers in East Texas are locked into long-term contracts with mills to supply timber at a set price. Therefore, despite changes in demand or lumber prices, timber prices have been set for some time, contributing to timber price suppression. With many of these contracts set to expire, timber prices may react more favorably to changes in demand for lumber in the near future.

**Optimizing Lumber Production**

Landowners, foresters, and mill owners have improved their processes, often through automation and mechanization. It begins at the nursery, where growers cultivate trees to ensure consistent timber quality. The seedlings, once mature, are harvested by a team that sprays and packs the seedlings in the field as the machine moves up and down the rows. Seeds are delivered to planting sites and planted by machine on 75 percent of the land. The planter plows a groove for the seedling, and a disk pushes soil around it. Roughly 550 trees are planted per acre with a 90 percent expected survival rate. Seedlings are planted six feet apart in rows 14 feet apart. The density management maximizes the number of seedlings per acre, allowing the trees to self-prune (reducing the size of the limbs) as they grow but without restricting stalk growth. Once planted, the field resembles a Midwestern row-crop field.

Managers and foresters monitor a portfolio of fields spanning multiple counties, with each portfolio having as many as almost 200,000 acres. Their responsibilities include daily field monitoring, planning the timing of plantings, thinnings and harvesting, and hiring and scheduling the planters, loggers, and other contract labor. In addition, they are in charge of hunting leases and property taxes for the fields. The result of this intensive quality control is uniform fields with similar timber size and quality.

Field management also entails strategic planting to protect surrounding resources. Specific breeds of trees are planted a minimum of 50 feet from nearby waterways to protect water resources. Trees also are planted to create barriers from roadways and homesteads. Companies receive tax breaks for planting these trees as they are not income producing. Fields are audited annually to ensure compliance. These management techniques are part of a sustainable forestry certification implemented by the forestry industry as a proactive measure for dealing with environmental issues.

Fields are thinned 12 to 15 years after planting. The first thinning establishes the “down row.” Timber harvested from down rows is sold either to paper mills or oriented strand board (similar to particle board) mills. A second thinning takes place 18 to 20 years after planting. Timber removed at this point is sold as pulplwood, with larger trees going to “chip-n-saw” mills. The final harvest takes place at 25 to 30 years (compared with an average of 35 years for trees planted in the 1950s). At this time, the field has maintained the resemblance of a midwestern row crop field, a stark contrast to the traditional, less-manicured timber fields of the past. The field is clear cut at this stage as most trees have reached saw timber quality, their highest value.

Similarly, mills have automated and mechanized their processes to minimize error and optimize revenue. Computers measure incoming timber and cut-to-size timber based on open orders and current lumber prices to maximize profits. Some of the most efficient mills have removed human involvement almost entirely and run their operations with nearly a quarter of the staff some of their competitors employ. The only time a human hand touches the product is as it is being tagged for shipment. The remaining electrical, mechanical, and lead staff follows the processing from a control room. The mechanizing of the process reduces waste and requires less timber to produce the same amount of lumber previously supplied.
Finally, processes were optimized to minimize costs in the lower price market. Like the oil industry during the 2016 crash in prices, the timber industry prioritized cutting costs to increase the margins during the low price environment. Each step in the timber production process, from the nursery to the mill, was optimized to increase output per unit of input while decreasing waste (see sidebar). The previous structure of vertical integration is now a decentralized structure with each player focused on optimizing their individual practices.

The passive retirement investment strategy for timber is no longer competitive in today’s optimized timber management and production environment. The low-demand environment resulting from the Great Recession reduced prices and production margins, which incentivized optimization throughout the timber-supply chain. The result has been an increase in the amount of output and a substantial reduction in waste.

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