

# Milling Dimensions: Characteristics of Portable Sawmill Owners & Operators

► Learn more about the uses, benefits, and costs of portable sawmills.

Landowners harvest trees from their property for many reasons. Often this is done as part of a regularly scheduled timber harvest such as a thinning or final harvest. But there are times when cutting older trees in a small area to improve forest health or management is needed. In those cases, it can be difficult to get the timber harvested and sold for profit. Instead, trees may be left in the woods to rot, or piled and burned. Landowners need a better option to help them use this valuable resource.

Portable sawmills may provide that alternative. First popular in the late 1800s, portable saw milling was used to bring the mill close to the timber harvest site. These “one-man farmer’s sawmills” may have been either water or steam powered and could be dismantled by a small work crew and moved to the next location. Today, portable sawmills are truly portable and are easily moved on trailers that can be pulled behind pickup trucks. Modern models vary—ranging from small manual mills that cost just a few thousand dollars to fully hydraulic ones priced at more than \$20,000. Portable sawmills are currently popular for the ability to process timber into lumber that can then be used for specialty wood products and other hobby uses by their owners. However, there is also potential for these mills to process timber owned by small-scale private forest landowners that may otherwise go unused, providing landowners and entrepreneurs with alternative income opportunities and filling the niche that large-scale operations cannot fill.

Economic constraints on conventional logging operations can make harvesting small tracts cost prohibitive. Small-scale forest landowners often own smaller parcels that are not economical for larger logging operations to harvest. Therefore, if small scale forest owners are able to have their timber harvested at all, they may be forced to accept lower prices for it. Portable sawmills allow for the processing from smaller acreages of individual trees and timber that may not be practical economically to transport to a larger processing facility. In addition to being profitable on a small scale, portable sawmill operators also can use trees

damaged by storms or insects, making them a valuable management tool in a forest as well as in a residential neighborhood. For hobbyists and entrepreneurs, individual landowners and communities, they allow for the maximum return on a valuable timber product that might otherwise be lost.

In 2010, a survey of portable sawmill owners and operators was conducted by the Auburn University Department of Agricultural Economics and Rural Sociology and the School of Forestry and Wildlife Sciences. In this publication, we will highlight some of the findings from that survey including why people invest in portable sawmills, potential returns and costs, sources of timber, and typical sawmill products.



Portable sawmills can be moved to the location where trees will be harvested, eliminating the need to transport logs.

## Why Invest in Portable Sawmills?

Most people first invest in a portable sawmill as a hobby to complete a project, such as building a barn or outbuilding, around their home or farm. However, after initially purchasing a sawmill, almost half of the owners found that they were able to earn some part-time or full-time income from their operations.

Portable sawmills are a particularly attractive microenterprise for small farms, which may already have supporting equipment and easily accessible trees. Farmers can produce lumber for their own use and sell

the surplus or offer custom sawing for neighbors. A low up-front investment coupled with the ability to maximize returns on timber make this type of harvest attractive from many perspectives.

One of the most profitable uses of a portable sawmill is in the production of specialty products. Some owners have found success producing odd-sized turning blanks for woodworkers. In the Southeast, owners produce rough cut lumber from specific tree species such as oak, pine, maple, cherry, walnut, and cedar, which are often sought after by furniture makers. These are two examples of high-value products that are often unavailable in the marketplace.

Conservation is another major reason for the purchase of sawmills. Portable sawmill owners are able to reduce waste by using trees cleared for construction or damaged by insects or storms. Many owners depend solely on salvaged trees to supply their mill. In residential neighborhoods, homeowners are often willing to pay to have a fallen tree removed, providing income even before the trees can be milled. Sometimes homeowners may wish to process and purchase lumber from yard trees that have certain sentimental value. This service demands a premium price because of the unique skill and equipment it requires.



Moving lumber instead of whole logs is a major benefit of operating a portable sawmill. (Photo credit: John Gilbert)

## Income Generated from Portable Sawmills

When it comes to income generation, almost half of portable sawmill operators surveyed reported less than 25 percent of their household income from products produced from a sawmill. Another 10 percent earned 26 to 100 percent of their income from a sawmill. The remaining 40 percent of owners indicated that they earned no money from portable sawmilling. However,

many of those owners appear to have earned some money from sawmilling, but considered it a hobby and not a part of their household income. Typically, operators charged by the board foot or by the hour. Most portable sawmill owners noted an average cost of \$.15 or less per board foot to process lumber and charged their customers an average \$.20 to \$.30 per board foot. Hourly rates averaged \$55/hour. Pricing varied based on the tree species, location, and other factors. Customers were typically charged an average of \$.02 to \$.40 more per board foot for hardwood lumber.

It is important to remember that higher-value woods and unique products tend to bring a premium. Portable sawmills will produce higher returns when the product meets the needs of a niche market, rather than when it competes within the larger commercial market. Lumber production for a niche market might call for specific timber species instead of a species such as loblolly pine that is readily available in retail stores.

One-third of sawmill owners surveyed stated that they never keep itemized expenses for their sawmill operation, preventing them from knowing if they are profitable or what they might do to become profitable. Adequate bookkeeping, including budgeting expenses and keeping accurate records, is a vital part of a successful small business and should be part of any business plan, no matter how small the operation. Be sure to look at the additional resources at the end of this publication to learn more about starting and managing a small business.

## Costs of Owning a Portable Sawmill

A high percentage of owners reported earning income after purchasing the mill as a hobby. This is a result of low up-front investment and operating costs and the potential for high returns. Initial investment in a portable sawmill can range from less than \$1,000 (usually a used or small unit) to \$35,000 (usually a large commercial unit). Table 1 shows the average purchase price, reported by major brand, of a portable sawmill.

Around 75 percent of portable sawmill owners purchased new mills. Most owners purchase new because of the high resale value of used mills and because of the improved technology in new mills that reduces waste. Some mills were purchased jointly between two people or as a part of a business, but most owned sawmills as individuals. A cooperative, though rare in the southern United States, is another ownership structure for sawmills in which several individuals share the risk and profits of the operation.

Table 1. Average Purchase Price by Brand of Portable Sawmill	
Brand of Portable Sawmill	Average Spent
Enercraft/Baker	\$15,000 to \$20,000
Woodmizer	\$15,000 to \$20,000
Cooks	\$10,000 to \$15,000
Peterson	\$10,000 to \$15,000
Timberking	\$10,000 to \$15,000
Mobile Dimension	\$5,000 to \$10,000
Lucas	\$5,000 to \$10,000
Norwood	\$1,000 to \$5,000
Hud-Son	\$1,000 to \$5,000
Logosol	\$1,000 to \$5,000
Alaskan	\$1,000 to \$5,000
Homebuilt	Less than \$1,000
Other	\$5,000 to \$10,000

Cooperative owners may include mill operators as well as landowners, who could provide timber to feed the mill in exchange for lumber or income.

In the southern United States, the lifetime of a sawmill is usually 10 years. “Average” yearly costs, here defined as the interquartile range (25th–75th percentile) of respondents are shown in table 2. Expenses reported included things such as repairs, fuel, transportation, insurance, and labor. Total costs averaged around \$3,500.

Some additional equipment is needed to support a portable sawmill operation, whether for a hobby or an enterprise. Chainsaws, pickup trucks, and tractors are the machinery most commonly used with a sawmill. ATVs are sometimes used as a smaller, less expensive alternative to a tractor. Some operators may also use mules or horses for transporting logs to a central location, especially on sites where minimal disturbance is a priority. Fetching arches, skidding cones, motorized winches, grapple loaders, and trailers may also be used to maneuver logs. A few portable sawmill operators may even use skidders and excavators with tree cutting attachments. However, these require a much higher capital investment than the other tools require.

Drying and storage facilities are also needed. Postprocessed wood must be dried before use. Lumber is typically air dried in an open or sheltered area. However, very few southern owners reported investing in building a kiln, solar or otherwise. When all costs are considered, the cost to operate per board foot ranged from \$.01 to more than \$.50 and averages around \$.15.

Around 50 percent of owners process between 1,000 and 20,000 board feet per year, while around 17 percent process more than 100,000 board feet. Research has shown that the optimal scale of production for the average sawmill, where profits are maximized without increasing costs, is around 75,000 board feet.

Table 2. Detail of Yearly Costs of Operating a Portable Sawmill as Reported by Respondents to a 2010 National Portable Sawmill Owner Survey	
Expense	Average Cost Defined as IQR (25th-75th Percentile)
Labor costs	\$500
Replacement parts and repairs	\$300
Routine maintenance	\$420
Fuel and lubricants for mill	\$250
Insurance (liability, health)	\$600
Transportation	\$200
Purchase of timber or logs for milling	\$1,200
Total	\$3,470

The most common source of timber comes from forest thinning operations. Thinning a forest stand optimizes growing space by removing a portion of the trees, increasing the resources available for the remaining trees. It is a typical forest management activity, especially in southern pine forests. Multiple thinnings may take place in a stand, and the smaller diameter trees cut in the first thinning operation may not be large enough to justify milling. Subsequent thinnings that remove larger diameter trees are more likely the source of lumber used by sawmill owners. Storm damage, removal of yard trees, and insect damage also produce timber for portable sawmill owners, as all these trees will often be larger and possibly more valuable tree species. Follow-up interviews with portable sawmill owners revealed that they often bought their portable sawmills as a way to decrease the amount of timber waste they were witnessing throughout their communities. Figure 1 shows a breakdown of sources for timber for portable sawmill owners in the South.

In the South, oaks, pines, cherry, maple, and cedar are the most popular species to mill. Owners who process pine in the South most likely operate as a hobby, reflecting the profitability and demand for certain species over common pines.



Timber species also impact the typical products of portable sawmills. In the South, owners producing fence materials most often use juniper, cedar, and birch. Pine is least often used in the region as a building material, which is most likely a result of availability of pine lumber in stores despite its abundance in southern forests. Hickory and sweet gum are most often used as building materials.

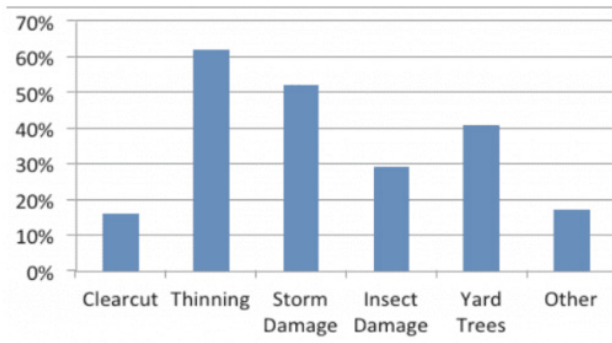


Figure 1. Portable sawmill use in land management in the South

## Products of Portable Sawmills

Most owners produce lumber for their own use or for selling or trading. Trading lumber for other goods or services, or even for other desired lumber products, is a common use of sawn logs. Lumber was more often used in the construction of a barn or outbuilding than in the construction of a house because of local building laws and ordinances, which may require a lumber grading stamp. The annual certification process and fees associated with obtaining a grading stamp can be a major roadblock to owners who wish to produce lumber for home construction. If you wish to use lumber processed from a portable sawmill for this purpose, be sure to understand local and state regulations for lumber grading and quality certification. Furniture, flooring, cabinets, and other crafts are also commonly made from this lumber with additional processing. In the southern United States, people involved in a full-time sawmilling business produce flooring more than any other products.

Survey results show that there is demand for products of portable sawmills. Those using lumber to create another

product, such as furniture, typically believe that local demand surpasses their supply. Those producing only lumber, however, typically perceive their production as outpacing the local demand.

## Conclusions

Portable sawmills meet a variety of landowner and community needs, from cleaning up storm debris to harvesting dying trees from a neighbor's yard. These operations have the potential to process wood harvested from small areas, filling a gap left as conventional logging operations decrease in number and increase in size. For communities and landowners, portable sawmills meet a growing need to increase timber use, thereby improving forest health and producing quality timber products. For those interested in starting a small business, selling wood produced using a portable sawmill and related finished products can be a source of additional income. But be sure to do your homework before starting any new business venture. The most successful entrepreneurs understand customer needs and work within local markets. Find the equipment that best meets your objectives, and learn how to use it safely. Target the production of products that are unique to a region rather than compete with larger, more established markets. And keep good records. That way you can better understand how you are expending your resources and your production capacity.

## Additional Resources

- Aulakh, J. 2011. Portable sawmills – A small scale microenterprise development. Auburn University. Masters thesis. Online. Internet. <http://etd.auburn.edu/handle/10415/2472h> 82 p. Lupo, CV. 2010. The role of portable sawmill microenterprise adoption in promoting rural community development and its application in small-scale forest management. Auburn University. Dissertation. Online. Internet. <http://etd.auburn.edu/etd/bitstream/handle/10415/2322/Complete%20dissertation%20FINAL.pdf?sequence=2>. 318 p. Mississippi State University. 2013. Natural Resources Enterprises. Online. Internet. <http://www.naturalresources.msstate.edu/>. Website. Richardson, RA. 2011.



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