

Alternative Markets for Generating Forest Income



Like any other commodity, the price of timber varies over time. During periods of high demand and low supply, as recently occurred in hardwood species, landowners enjoy higher stumpage prices. However, when demand falls and supply increases, as has been the case with pine sawtimber in some parts of Mississippi over the past decade, forest landowners receive less for their trees. It is during these periods of lower prices that many forest landowners become interested in pursuing new ways to generate income from their property.

Fortunately, forest ownership offers several economic opportunities, and many of these opportunities are compatible with timber management. In some situations, timber-owning landowners may have to do very little to diversify their forest products portfolio. Other opportunities, however, will require deviations from traditional timber management practices. Selecting a new market to produce for is ultimately up to the landowner's ownership goals. However, if earning income is an important consideration, landowners should always determine whether a local market exists for a particular product. Landowners should also consider whether their property is capable of producing a particular product.

This publication summarizes information presented in a Mississippi State University Extension Forestry short course devoted to alternative sources of forest incomes. The goal of this publication is to introduce forest landowners to economic opportunities to supplement their timber income. For more information on any particular product described in this publication, landowners are encouraged to consult the corresponding Extension publication dedicated to each product, or contact Mississippi State University Extension Forestry.

Specialty Woods and Other Forest Products

In the realm of alternative forest products, several nontraditional sources can require dedicated management strategies and often become stand-alone business endeavors (for example, pine straw production and Christmas tree farming). Others require less intensive management efforts yet can still provide viable

sources of income for the enterprising landowner. Some of these include selling firewood, making homemade crafts, growing fruits and mushrooms, and marketing specialty woods.

One of the more common questions that land managers receive regarding alternative forest products is, "How much is my [black walnut, persimmon, royal paulownia, etc.] tree worth?" Multiple tree species in Mississippi can produce quality wood valued at many times that of normal stumpage, but, typically, market constraints limit where, when, and how this wood can be sold. For example, a high-quality black walnut log might be "worth" substantially more money than oak logs growing around it, but several immediate considerations may affect your ability to sell it. With any specialty forestry product, it is always important to confirm that smaller quantities of material can be sold and that logistical factors will not complicate the transaction. These questions and others must be considered when attempting sales of specialty woods. If you believe that you have trees that might be marketable as specialty woods, please go to the Mississippi Board of Registration for Foresters website (<http://www.cfr.msstate.edu/borfl>) to obtain contact information for consulting foresters in your area.

Another specialized forest product is veneer. Constraints similar to those discussed above dictate marketability of veneer. While considerably more valuable than normal stumpage, veneer logs are produced on a much smaller scale, and sales have to be of a certain size to attract potential buyers. Typically, veneer buyers will not be interested in sales of less than one truckload of veneer logs.

Other non-log forest products, both processed and raw materials, can be used by landowners willing to explore these nontraditional markets. One of the more well-known processed products with a relatively strong market is firewood. Cutting and selling firewood is a laborious process, but it requires very little startup capital and can earn substantial income in the right market. Viable firewood sales can be made using relatively small hardwood tracts, and this can offer landowners a stream

of income from wood that might not otherwise be used in silvicultural treatments like timber stand improvement and salvage cuts. While rural firewood markets are still relatively strong, urban firewood sales have risen sharply over the past decade. As of 2017, urban prices for a cord of quality oak firewood in the South average between \$250 and \$350, with rural prices averaging between \$100 and \$150 per cord.

Numerous other sources of income including harvesting fruits, nuts (pecans, walnuts, and acorns), pine cones, medicinal plants, and other products exist. In addition, the homemade craft market is strong, with items such as walking canes, wooden baskets, wreaths, wooden bowls, and picture frames in strong demand. These products and many more are available to interested landowners willing to seek out and capitalize on market niches.

Pine Straw

Many forest landowners are surprised to learn that pine needles are marketable. Pine straw (recently fallen, undecomposed pine litter) has become a desirable material in the landscaping industry (**Figure 1**), where it is used as mulch, and in the construction industry, where it is applied to control erosion. Although the pine straw industry is not as developed in Mississippi as in some neighboring states, interest in this market has recently increased.

Forest landowners should be aware of a few key factors before committing to selling pine straw. Much like the timber industry, stand location influences the marketability of the straw. Raking contractors prefer stands with access to wide roads with ample area to turn around. Pine straw markets tend to be strongest near cities. This relates back to the primary uses of pine straw.

Unlike the timber market, prices do vary among pine species. Longleaf pine (*Pinus palustris*) is considered the premium pine straw species. Longleaf stems are easy to bale and relatively durable compared to other pine species. Consequently, bales or lump-sum agreements tend to bring three to four times the value of loblolly pine (*P. taeda*). Slash pine (*P. elliottii*) also provides higher value than loblolly. While loblolly may not bring a premium price, it still produces a marketable product. Furthermore, loblolly generally produces more straw per acre than the other pine species at a given density. Thus, forest landowners with loblolly pine should not summarily dismiss pine straw as a viable alternative product.

Stand characteristics are another factor to consider before raking straw. Flat terrain is more conducive to straw raking than areas with rolling hills. Stands exceeding 8 percent slope should not be raked due to erosion concerns. Stands with deep, sandy soils should also be avoided due to poor productivity and nutrient loss concerns. Understory conditions are often a limiting factor for



Figure 1. Pine straw landscaping on the campus of Mississippi State University.

straw-raking. Contractors require an understory clear of vines, volunteer trees, shrubs, and herbaceous species. As such, many stands will require an initial investment in vegetation control.

One of the more attractive aspects of pine straw-raking is its compatibility with traditional timber management. Like timber, pine straw is most efficiently produced when grown in a plantation. The only real consideration that forest landowners need to be aware of is the spacing between the rows of pines. Modern equipment requires at least 8 feet between the rows for navigation. Raking typically begins around the age of 10, but this does depend on several factors. Most landowners rake their stands in 2- to 3-year intervals before the first thinning. Stands can be raked beyond the first thinning; however, post-thinning rakes tend to be less efficient and profitable. For more information on managing for pine straw production, consult MSU Extension Publications 2718, 2741, 2761, and 3129.

Pole Production

Forest landowners are often attracted to growing poles for their high selling price. On average, utility poles bring twice as much as sawtimber, with transmission poles bringing even higher prices. Stumpage prices in the pole market also tend to be more stable than prices in the sawtimber market.

Early in the rotation, managing for poles is very similar to sawtimber management. In fact, the decision to manage for poles and sawtimber really doesn't have to be made until the first thin. The main differences between managing for poles and sawtimber result from the post-thinning density of the stand. Pole-managed stands are generally kept at higher residual densities following the first thinning than stands managed for sawtimber. This higher residual density encourages good stem form, minimizes stem taper, and encourages self-pruning. As an added bonus, the higher residual density lengthens the time in which pine straw can be raked effectively. Nevertheless, pole management does have its drawbacks, and forest landowners should be aware of some of the challenges before they decide to manage for poles.

The value of poles is linked to their relative scarcity. Trees must meet a rigid set of requirements to qualify as poles. Trees are evaluated on the following characteristics:

- stem straightness (essentially, string-line straight for the first 40–60 feet)
- minimal stem taper
- no branches living or dead in the first 10 feet
- no living branches in the first 32–40 feet

- existing branches less than 2 inches in diameter and not at sharp angles
- minimal knots (especially on the lower half of the tree)
- absence of any stem defects or cankers on the lower stem (**Figure 2**)



Figure 2. The tree marked with orange paint demonstrates pole-quality form.

These characteristics go along with diameter (measured at 6 feet), length, and top circumference requirements needed to fit in a particular pole size class. For these reasons, only a small percentage of trees meet the specifications of a pole.

In terms of managing for poles, forest landowners should plan for longer rotations. This is partly because of the larger size requirements of utility and transmission poles, but it is also related to the management strategy. Given this longer time on the stump, forest landowners must be willing to accept increased risk of storm and/or insect damage. For more information on managing for poles, consult MSU Extension Publication 2973 *Guide to Increasing Utility Pole Production in Pine Plantations*.

Biomass Production

Currently, biomass production is not considered a viable economic alternative. However, global focus is on eliminating or greatly reducing the need for fossil fuels and moving not only toward renewable energy, but also toward producing various products through the petrochemical industry. In order to do this economically, the best strategy may be to grow specific biomass on very short rotation lengths that could vary from 2 to 6 years. To date, the majority of the woody biomass research has focused on eastern cottonwood and various hybrid poplars. These types of materials are very good for making carbon fiber products as well as various types of polymers.

Today, the biomass market is concentrated on pellet production, with nearly all of the production being shipped overseas to produce electricity in the United Kingdom and the European Union. This is a result of self-imposed legislation to meet their carbon dioxide reduction goals as directed through various climate action systems, such as the Kyoto Protocol and the Paris Agreement. The primary material used for pellet production has been focused on first thinnings in certified pine plantations. This provides clean wood chips (no bark) that are very low in ash content (ash typically comes from leaves,

bark, and other types of material). In addition, the pellet market is also driven by the proximity of these plantations to deep-water ports, which reduces transportation cost. In Mississippi, the two primary market areas are in the southern portion of the state: Drax (located on the west side of the state very close to a port out of Baton Rouge, Louisiana) and Enviva (located on the east side of the state near the port in Mobile, Alabama).

By using dedicated energy plantations, also known as short-rotation woody crops, landowners may someday be able to produce considerable tonnage in a short period of time. Under this strategy, trees are planted fairly tight at a spacing of 9 feet between rows and 3 feet within the row (**Figure 3**). This planting design takes advantage of the rapid juvenile growth rates of the poplar species, with trees reaching 3 inches in diameter and a total height of approximately 20 to 25 feet at age 2. Because of the close spacing and rapid growth, weed control is limited to age 1. The ability to resprout following harvest minimizes weed competition, as the new sprouts will reach nearly 20 feet in the first year; multiple harvests through the years can be completed before needing to replant. For more information on managing for woody biomass, consult MSU Extension Publication 2612 *The Future of Woody Biomass in a Renewable Economy*.



Figure 3. Example of the tight spacing in a biomass plantation.

Agroforestry

Agroforestry is the intentional combination of agriculture and forestry into an integrated and sustainable land-use system (**Figure 4**). Agroforestry provides a number of benefits, including improved biodiversity, soil properties, and water quality. This can also enhance aquatic and wildlife habitats. Furthermore, the diversity of products provides more market and revenue opportunities. The practice of agroforestry can take many forms, including alley cropping, silvopasture, forest farming, riparian forest buffers, and windbreaks.

Alley cropping is the integration of annual crops with perennial woody crops. Trees are grown in widely spaced rows for timber or nut production. Annual crops are then grown between the tree rows. Since tree crops can take many years before producing a harvest, the agricultural cropping can produce an annual income. Alleys need to be wide to allow sufficient sunlight for crops to develop. As trees mature, you may need to select annual crops that are more tolerant of shading.

Silvopasture is similar to alley cropping. With silvopasture, the annual crop is any of a number of forages for hay production or grazing. This system offers the benefits of combining forages for short-term cash flow with tree crops for long-term cash flow. In addition, the tree crops can provide additional benefits to livestock, such as shade in the summer. Trees must be sufficiently large before livestock can share the growing space. In addition, all the requirements for ranching must also be met, such as watering systems and fencing for rotational grazing.

Forest farming includes harvesting specialty forest products under a maturing forest, such as cones for arts and crafts or pine straw for mulch. Forest farming can also include crops that require a closed canopy, such as medicinal herbs or specialty mushrooms. Mississippi has a handful of forest farmers who sell their products to cities within and outside the state.

Other examples of agroforestry include riparian buffers and windbreaks. Riparian buffers are created by growing trees along streambanks in agricultural or pastoral settings. Riparian buffers provide ecosystem benefits by stabilizing soil, preventing streambank erosion, filtering runoff from fields or pastures, and even supplying wildlife habitat. A windbreak involves growing several rows of trees on the windward side of homes, barns, or fields perpendicular to the prevailing wind direction. Windbreaks improve the microclimate by deflecting wind off the ground. These wind barriers can improve growing conditions for crops by allowing less evaporation or enhance livestock vigor by providing shelter. Windbreaks can also reduce energy costs for homes and farm buildings.

Since agroforestry is an integrated system, it is very important for landowners to develop written management plans. Agroforestry can be flexible to suit individual producer conditions and budgets. The benefits of market diversity and environmental enhancements make this a sustainable agricultural practice. For information on managing an agroforestry system, consult Virginia Cooperative Extension Publications CSES-155 and CSES-146.

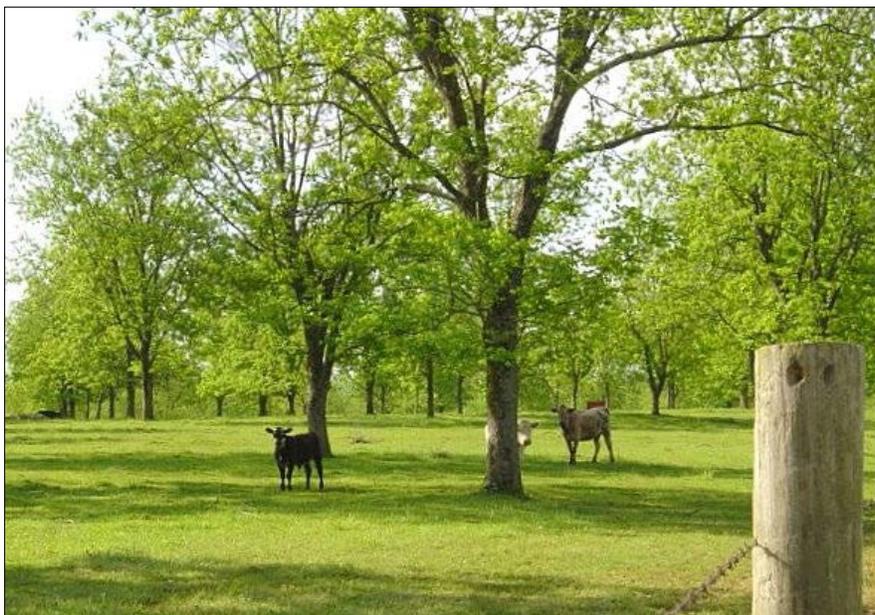


Figure 4. Example of silvopasture-grazing cattle in a pecan grove at Crenshaw Farm near Como, Mississippi.

Christmas Tree Farming

Mississippi has a vibrant Christmas tree industry. Two dozen growers across the state produce a variety of Christmas trees for sale every year. Mississippi has a humid, mild climate, and producers can sell a tree in 4–5 years. Most of our growers operate choose-n-cut farms; customers visit the farm to choose a tree, which is then cut and sold to them for decorating at home. Freshness is guaranteed!

Christmas tree species grown here must tolerate hot summers and occasional droughts. Several species are available. Among these, the Leyland cypress (*Cupressus × leylandii*) is the most commonly grown Christmas tree. It is actually a hybrid of the Monterey and Nootka cypresses. The Leyland has excellent needle retention after cutting when kept in water. It is also non-aromatic, which is desirable for people with allergies to coniferous resins. Another frequently grown tree is the Arizona cypress (*Cupressus arizonica*). The needles are pale gray-green to blue-green. Needle retention is 2–3 weeks, so this tree should be purchased close to the Christmas holiday. It is also aromatic. A third tree commonly grown is the Eastern redcedar (*Juniperus virginiana* ‘Burkii’) (Figure 5). This tree can tolerate more alkaline soil conditions. Again, needle retention is 2–3 weeks, and this tree is aromatic.



Figure 5. Eastern redcedar variety Burkii on the Rosebud Farm.

While Christmas tree producers have a 1-month retail season, the growing season is all year. Growers plant seedlings or rooted cuttings in winter, from mid-January until the end of February. Typically, 600–900 trees per acre are planted. Growers must choose a spacing that will allow access between trees and trails for customers to use. Much of the growing season is spent mowing between trees and controlling weeds beneath the trees. The trees are fertilized to increase their growth rate, aided by soil testing. Pruning is done in mid-summer to shape the tree and stiffen branches. Just as important as weed control is scouting for insects and disease. Many growers have a regular spray schedule for fungicides and insecticides to prevent diseases and pests.

Besides growing the crop, choose-n-cut producers must master marketing. The Southern Christmas Tree Association (<http://www.southernchristmastrees.org/>) supports the industry in Alabama, Louisiana, and Mississippi. The association helps provide marketing for members on its webpage. Also, many growers practice agritourism to expand their retail season. These operations might include alternative enterprises such as a corn mazes, pumpkin patches, or you-pick fruits. Often, school children are invited to visit and experience farming.

When it comes to operating a Christmas tree farm, taxes must be considered. The IRS generally allows producers to deduct annual operating expenses as for a business. Christmas tree farms in Mississippi generally do not qualify for capital gains treatment of cut trees less than 6 years old. Mississippi Christmas tree plantations do not qualify for reforestation amortization or tax credits. However, state sales taxes are exempted on trees grown and cut on the farm.

Growing Christmas trees is an excellent alternative source of income for landowners. Since Christmas trees can be grown in 4–5 years here, a lot of land is not necessary. Many producers operate “weekend” farms on just a few acres, growing several hundred trees for sale any given year. It’s a great way to grow into the business. For more information on managing for Christmas tree production, consult the University of Tennessee Agricultural Extension Service Publication 1463 *Tree Crops for Marginal Farmland—Christmas Trees*.

Wildlife-Related Recreation

Most Mississippi landowners are good stewards of the wildlife that inhabit their forest lands. In fact, this is one of the main reasons outside of producing timber that individuals own land. Yet, as with everything in life, there are costs to owning and managing land. The fluctuating timber market over the last decade has forest landowners looking for ways to diversify their income. One way to accomplish this is through wildlife-related recreation.

Over 1.1 million people, both residents and nonresidents, participate in wildlife-related recreation in Mississippi each year, spending approximately \$936 million. The primary activities include hunting, fishing, and wildlife watching. With over 80 percent of the land in Mississippi being privately owned, there is a lot of potential for landowners to provide wildlife-related recreation opportunities on their properties. A hunting lease operation is the most common activity offered by private landowners in Mississippi. Income potential from a hunting lease can vary dramatically depending on your location, species involved (big game, small game, waterfowl), the size of the property, land cover types, and amenities. Current leasing prices for Section 16 lands in Mississippi range from \$4 to \$54 an acre; these prices are a good barometer for estimating local leasing rates for private landowners (Mississippi Secretary of State). The higher rates are typically garnered on the extremely fertile soils of the Delta and involve waterfowl hunting leases. But it is not uncommon to earn \$7–\$15 per acre on well-managed private forest lands. It is important to remember this is additional annual income on top of your timber-related income.

Before jumping into a wildlife-related enterprise, you should take several issues into consideration.

- Do you and your family have time to manage the potential clients? Or, more importantly, do you want to?
- What liability concerns do you need to consider?
- Can one of these wildlife enterprises fit into your long-term management goals for the property?
- What wildlife management measures do you need to have in place to conserve the wildlife resource in the future both for your potential business and the ecosystem as a whole?

All of these questions will have different answers depending on your life situation and land-management goals. But, through a little research and consultations with natural resource professionals, you can find solutions to these concerns.

Mississippi State University Extension and other partners created the Natural Resource Enterprise program at MSU to help landowners navigate the issues around leasing their lands for wildlife recreation opportunities. The program offers many tools for landowners through an interactive website (www.naturalresources.msstate.edu) that hosts how-to videos, publications, and much more. The program also offers landowner workshops that are hosted at current wildlife-related recreation businesses across the state throughout the year. For more information, consult the website for upcoming landowner events.

Summary

Future market conditions are difficult to predict. For this reason, diversifying the range of forest products you produce is a good way to hedge against unexpected downturns in individual product classes. The key to diversifying your forest products portfolio is to find an alternative product that meets the needs of an existing or anticipated market, fits within the physical constraints of the land, and is consistent with your overarching management goals. Pursuing alternative products that do not meet these basic criteria is strongly discouraged.

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