Journal of Extension

Volume 54 | Number 3 Article 16

6-1-2016

On-Farm Forest Income in the United States, 2003–2012: Thoughts for Extension Programming

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Journal of Extension
www.joe.org

June 2016
Volume 54
Number 3
Article # 3RIB3
Research In Brief

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Abstract

Forest-based production on U.S. farms totaled $653.2 million in 2012, admittedly a small portion of total farm wealth. However, despite the effects of the recent economic downturn, on-farm forest product revenues still approached the gate value of North Carolina timber in 2012, which was $730.6 million. Providing the research-based information, technology transfer, and educational programs farmers need to manage trees to generate income while preserving the ecosystem in a manner that is socially acceptable requires a multidimensional approach by Extension specialists working across disciplines. Two examples of multidimensional approaches, one centered on audience segmentation for targeted outreach and the other on forest economic development, are proposed and discussed.

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Introduction

"Farm forestry" is a term rarely, if ever, used today. It was quite popular, though, in the time spanning approximately the World War I to post–World War II years. Fallow farmlands were reverting to forests due to reduced productivity and economic returns, and often even tax delinquency. During the economic depression of the 1930s, government-sponsored initiatives promoted tree planting as a means of effecting conservation and erosion control, and of providing needed jobs for the unemployed.

Extension recognized agriculture's reliance on a strong natural resources base by initiating farm forestry programs throughout the country. North Carolina, for example, hired its first farm forestry specialist in 1917. Farmers were encouraged to responsibly manage their forestland not only for its aesthetic and nontangible amenities, such as plant and wildlife diversity, but also as a potential income supplement.

Historically, rises in world population and wealth have correlated highly with increasing timber consumption, with timber being used to provide shelter, energy, and a myriad of durable and nondurable forest products (Haygreen & Bowyer, 1996). Because of such circumstances, corn growers across 16 significant corn-producing states received payments totaling $200 million for forest products in 1996 (Kelson, 1999).

More recently, the U.S. forest economy experienced significant structural changes due to the housing market's abrupt decline and the subsequent 2007–2009 global recession (Ince & Nepal, 2012). Despite this fallout, however, each American still consumes the equivalent of 1 cu m of wood daily (U.S. Department of Agriculture Forest Service, 2012). As forest-based sectors continue their gradual recovery to prerecession levels and beyond (Ince & Nepal, 2012), farmers who own standing timber and are interested in income diversification may look to marketing forest products.

The purpose of this article is to highlight on-farm forest income in the United States for the years 2003–2012. Discussion on the forest economy is provided, along with some thoughts on Extension's opportunity for engaging interest in farm woodland management.

Methodology

Agricultural production data for the United States at the state level were downloaded to Microsoft Excel from the U.S. Department of Agriculture (USDA) Economic Research Service's Report on Farm Income and Wealth (U.S. Department of Agriculture Economic Research Service, 2013). Information for this report was acquired primarily through USDA's Agricultural Resource Management Survey. Revenues were categorized in the report as crop revenues, livestock revenues, forest product revenues, and revenues from hired services, such as custom harvesting. Forest products sold included timber, firewood, maple syrup, Christmas trees, and decorative products. At the onset of the study, 2012 was the most recent year for which data had been updated and finalized.

All crop, livestock, and forest product revenues from 2003 to 2012 were extracted from the report and converted to 2012 constant dollars through the use of the Producer Price Index for all commodities (U.S. Department of Labor, Bureau of Labor Statistics, 2015). State-level data related to on-farm forest income for 2012 were exported from Excel to Tableau to allow for mapping to highlight the most recent geographic distribution of forest-based incomes on farms.

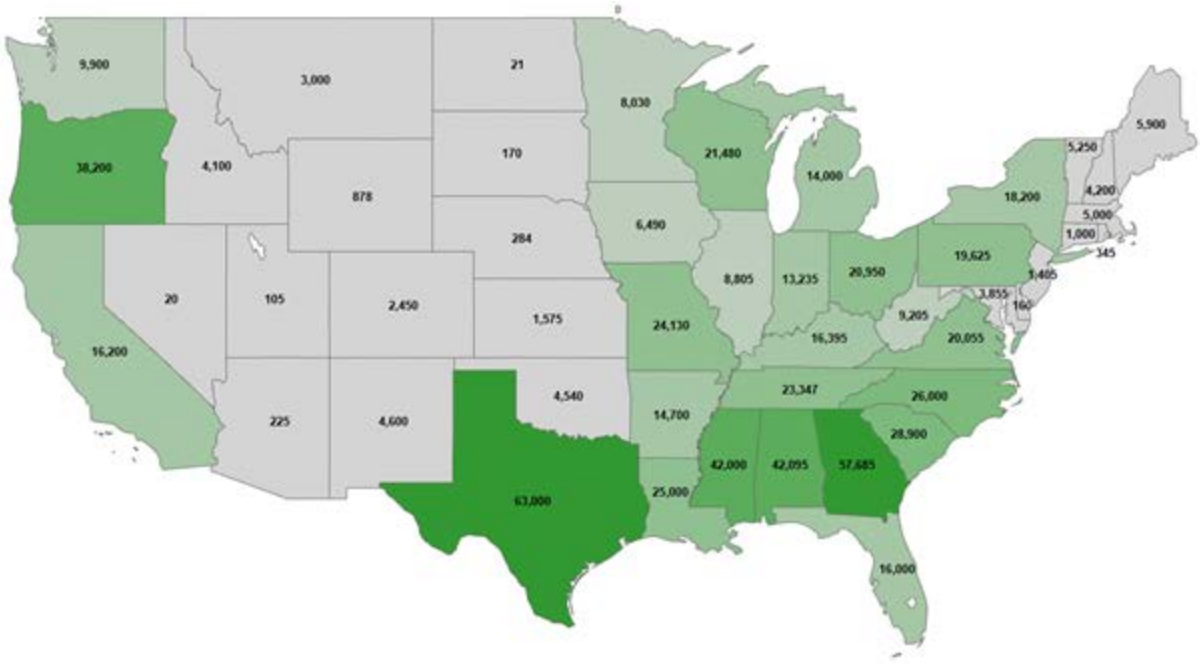
Results

Production of crop, livestock, and forest products on farms totaled nearly $400 billion in 2012. Almost all farm income was derived from crops (55.8%) or livestock (44.0%). Forest-based production totaled $653.2 million, which contributed 0.2% to total farm wealth.

Forest income on farms averaged $13.1 million per state in 2012. Twenty-one states exceeded the national average, with 12 of those located in the South (Figure 1). Moreover, eight of the top 10 states generating on-farm forest income were located in the South, and Texas led the nation at $63 million. Although not pictured in Figure 1, Alaska ($40,000) and Hawaii ($400,000) were included in the analysis.

Figure 1.

Distribution of On-Farm Forest Income (in Millions) in 2012

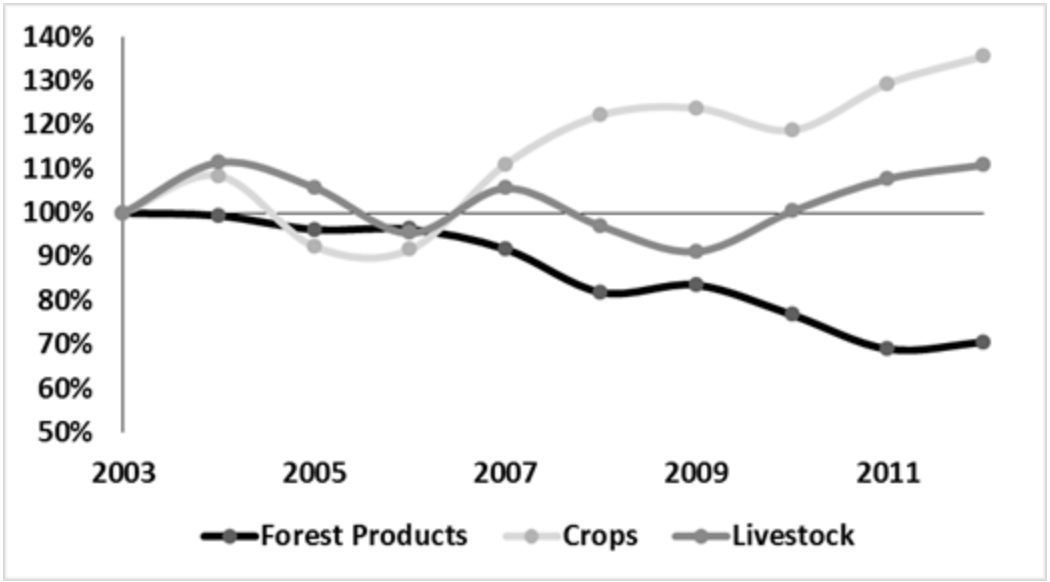


Darker green implies relatively higher on-farm forest income; lighter green to gray implies relatively lower on-farm forest income.

Figure 2 highlights the trends in U.S. farm income by product group, which were indexed to the base year 2003. Forest products income fell slightly from 2003 to 2006 before decreasing more sharply beginning in 2007. It experienced the greatest relative decline among the groups relative to its base year. Farm income derived from crops showed an overall increasing trend in total value. Livestock revenues fluctuated over the time series, but they held steady overall. The three trends began to noticeably diverge following 2006.

Figure 2.

Farm Income Trends by Product, Indexed to 2003 (2003 = 100%)



Discussion

Forest-based income is a very small contributor to total farm wealth. As timber prices fell precipitously beginning in 2004, an increasing number of farmers may have chosen to forego a timber sale, electing instead to store their wood on the stump until market conditions improved. An alternative scenario is that farmers may have chosen to produce crops and livestock more intensively to capitalize on favorable market conditions, with investment in other areas coming at the expense of devoting resources to forest management. Or some combination of these two scenarios may have factored into farmers' decision making.

These reasons imply active management of forested lands, which often does not actually occur for nonindustrial, privately owned woodlands (Butler, 2008). Commonly, a large percentage of those landowners who do manage their lands lean toward an overall less consumptive approach to forest management, having objectives other than just land production, resource utilization, and any subsequent financial gains (Starr, McConnell, Bruskotter, & Williams, 2015). Also, it was found that some farmers approach their woodlands pragmatically and are willing to participate in the forest products marketplace, should circumstances dictate, but are less inclined to practice silviculture (Kurtz & Lewis, 1981).

Farmers who have sold timber over the past decade may simply have had an immediate need for cash, given the economic environment at the height of the global recession. The proverbial "knock on the door" during what was a stressful time for many could have eased financial concerns for families while providing needed work for forest-based businesses. Also, extreme weather events may have resulted in unexpected timber salvage sales. For example, in one case, one-fifth of North Carolina family forest owners harvested timber in response to a natural disaster (Butler, 2008).

Industrial demand is a key driver in a landowner's decision to invest in forest management (Miner et al., 2014). One significant effect of the economic downturn was the downsizing of the forest products manufacturing sector in response to the decreased demand for wood and fiber (Woodall et al., 2011). Plant closures, along with cost-cutting measures to keep remaining mills operational, squeezed the logging industry—which was already highly capitalized and in a multiyear struggle against increasing fuel, insurance, and labor costs—into a significant contraction (Pelkki, 2012).

Transportation is a significant factor as well. It is feasible to haul timber, which is heavy and bulky, only relatively short distances. In localized areas that experienced significant forest sector contractions, longer trucking distances added to transportation costs, pushing even further downward on prices paid to landowners who did conduct a timber sale.

In spite of the various significant factors contributing to farmers' reluctance to effectively manage trees to produce income, there is an alternative point of view about the potential of on-farm forests. In 2012 on-farm forest income approached the total gate value of timber in North Carolina, which was $730.6 million that year (Jeuck & Bardon, 2013). Further, Kelson's study of corn growers (1999) found that forest income averaged nearly 10% of gross farm income for those reporting harvests of forest products. Forestry may indeed contribute little to the farm enterprise overall. However, where those contributions do occur, they could be sizable in proportion to total farm

wealth.

Implications

Farm woodlands provide many benefits to the environment and the economic development of communities. In terms of dollars, standing timber is a stable form of wealth, often comparable in performance to other financial investments. Looking beyond timber production, activities such as forest farming and maple sugaring can provide the farmer both timber stand management and a "forest to fork" direct marketing opportunity (Kays, 2004).

Other benefits extend past those measurable on a ledger sheet. Responsibly managing farm woodlots improves forest health and, consequently, aesthetics and wildlife habitat. Soils are stabilized, water quality is improved, and carbon is sequestered. Placing market values on these qualities is still in the incipient stages of research.

Moreover, intangible benefits, such as personal satisfaction, are guided more by individual choice. Measuring those attitudes can provide needed information to clientele, organizations, and lawmakers involved in policy and decision-making discussions (Guy & Rogers, 1999). This is particularly true in communities where forestry may not be fully understood.

Given these drivers, it is critical for forestry specialists to collaborate across disciplinary lines to maximize interest in these lands, not only from the perspective of forestry clientele—landowners, loggers, and mill operators—but also the rural communities in which they reside.

One approach forestry specialists might use to better understand farm woodland owners is to conduct typology, or segmentation, needs assessment surveys. These studies can be performed in partnership with natural resources management specialists (forest recreation or similarly named specialists) and/or rural sociology specialists, who have fundamental groundings in the social sciences.

Identifying "clusters" of landowners around the framework of their decision making can make outreach events more impactful via targeted programming (Ross-Davis & Broussard, 2007), such as "welcome wagons" for new forest landowners (Apsley, Bagley, & Samples, 2005; McCuen, McGill, Arano, & Owen, 2013) or timber marketing education for those more active in the forest-to-market process (Landefeld & Schumacher, 2006).

Specialists should be mindful, though, that landowners have increasingly viewed the forest as more than just a source of income through stumpage sales. Even tree farmers, active woodland managers as certified by the American Tree Farm System, were recently found to perceive natural and social sciences information equal to or more important than forest financial management information (Starr et al., 2015). Segments within the farm woodland owner clientele base may harbor the same views. Encouraging acceptance of forest stewardship will therefore require curriculum development across the triple bottom lines of sustainability.

A second approach forestry specialists can use is to work with industry to strengthen procurement patterns within the forestry value chain. This goal can be accomplished in collaboration with community development specialists and/or economic specialists. As is the case in North Carolina,

many forestry Extension groups have undertaken defining the economic contributions of their states' forest industries (Jeuck, Bardon, Hazel, & Sugerik, 2014). Such endeavors have helped inform the extent to which the forest sector influences respective states' economies.

A needed next step is identifying value chain linkages between the forest products industry and its suppliers and service providers within regional economies. Policies geared toward forest economic expansion should target base industries, those whose exports from a region bring new money into a local economy (Mulkey & Hodges, 2000). It is these businesses that are capable of generating subsequent spillover impacts backward through the wood supply system to the (farm) woodland owner.

Injections into such sectors lead to the multiplier effects quantified via input-output analysis (Blaine, Bowen-Ellzey, & Davis, 2011). For-fee software, such the IMPLAN system, can provide users with region-specific models of economic activity. No-fee options, such as the Bureau of Economic Analysis's input-output tables (U.S. Department of Commerce, Bureau of Economic Analysis, 2015) and Regional Economics Applications Laboratory's REAL-IO software (University of Illinois, 2015), are also available, but they require additional tailoring to provide similar results at the state, or more local, level.

Regardless of whether Extension specialists take an approach centered on audience segmentation for targeted outreach, one centered on forest economic development, or another applicable approach, opportunity exists for group efforts in meeting farmers' needs for managing on-farm forests. Managing the farm woodland for the efficient production of timber while also preserving its environmental capacity in a socially acceptable manner is a multidimensional endeavor, with many complex interactions. Engaging the farm community in forest stewardship activities therefore will require specialists to think in multiple dimensions as well.

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