FIREWOOD PRODUCTION AND RETAILING FOR EXTRA INCOME: A MARKET ANALYSIS

by Allan Marsinko

Abstract. Firewood production and consumption in Greenville, South Carolina, was estimated using consumer and producer surveys. Total firewood consumption in the area was estimated from consumer-supplied data. The total cost of various methods of producing and delivering firewood was estimated from producer-supplied data. There are several ways in which arborists involved with tree removal and pruning can profit from the growing firewood market in areas similar to that studied. These range from operating a complete firewood producing and merchandising firm to using other firewood producers as outlets for waste wood.

The use of firewood for home heating has increased dramatically over the past few years. Firewood production, however, is still an evolving industry in many areas, especially in the South. There seems to be room for new producers and for increasing the efficiency of the production operations. Efficient firewood operations can be profitable sources of extra income for arborists involved with tree removal and pruning. However, there are several profit reducing pitfalls that the potential firewood producer should avoid.

This study was conducted to: 1) analyze consumption and production in a specific firewood market, 2) identify potential firewood purchasers, and 3) identify major costs and compare methods of small and mid-scale firewood production and retailing.

The study area. Greenville, South Carolina, was chosen as the study area. It is a medium-sized city of 58,242 residents in Greenville County (population 287,913). The population included in the Greenville firewood market is 241,725 residents or 82,500 households.

Consumption and production. Firewood consumption was measured during a statewide study using a mail and telephone survey. Forty-two percent of the households surveyed used firewood. Within this group, consumption averaged 1.3 cords per season per household while only 19.5% of the users consumed more than 2 cords per season. Nearly 69% of the users cut their own firewood.

Production and characteristics of those selling firewood in the study area were measured using a telephone and personal interview survey. The 47 responding producers could be placed into one of three categories: 1) firms who cut, hauled, and processed their own wood and delivered it to the consumer (or allowed the consumer to pick it up), 2) firms who purchased cut wood delivered to their processing location, processed it and delivered it to the consumer (or allowed the consumer to pick it up), and 3) firms who purchased and resold processed wood. All of the firms were in the firewood business part time. Most considered it a source of extra income and were one- or two-person operations. Surprisingly, most of the individuals were primarily employed in industry rather than a tree-related business.

Most (33) firms sold wood by the pickup truck load although some (10) sold by the cord or both (2). The lack of a standard unit (i.e. variation among sellers) was a common complaint of producers. The availability, accessibility, and cost of wood were common problems cited by the producers.

The market. Figures supplied by telephone companies were used as indicators of the market for Greenville. Using these figures (82,500 households), an estimated 45,000 cords of firewood were consumed during the 1980 burning season. Of these, an estimated 14,000 cords were purchased. The mean purchase price reported by consumers was $88 per cord and prices ranged from a low of $28 to a high of $170 per cord. These figures correspond well to the advertised prices of $80 to $90 per cord and $30 to $45 per pickup truck load. Using the mean of $88, an estimated $1,250,000 were spent on firewood in the Greenville market in one season.

What do these figures mean to the firewood industry? As reported, they can certainly support several high-production automated processes. In terms of growth, firewood use will probably in-

crease as long as prices of alternative sources of energy remain high. From 1977 through 1982, advertised firewood prices have increased an average of 10% per year which is slightly above the average inflation rate of 8.7% per year and far below the average fuel price increase of 16.1% per year. Population increases, which have occurred in many parts of the South, should result in an increase in firewood use. The population of Greenville has increased approximately 2% per year in the past few years. If this increase continues, firewood consumption could increase at the rate of 900 cords per year. Aggressive marketing techniques and organization within the industry could increase the percentage of wood burning households who purchase wood, currently only 31%.

Firewood production economics. Is firewood production profitable? The answer to this question depends very much on the equipment used for hauling and delivering firewood. In this study, pickup truck-based operations either lost money or barely broke even at a $5.00 per hour wage rate even though they received considerably higher prices per cord than operations using larger trucks.

Table 1 shows a breakdown of total costs of various equipment combinations and operations. Hauling, as used in the table means handling and transporting the wood from the cutting site to a central processing location. Prices used for the analysis were current as of December 1981. Machine rates commonly used for forest harvesting operations were used to estimate the equipment portions of the costs. Hauling and delivery distances, and times as well as processing times, were obtained from the survey. Labor was calculated at $5.00 per hour. Land, taxes, and advertising costs were not considered in the analysis.

A rough estimate of net revenue for a given type of operation can be found by combining the costs and processes in Table 2. People involved with tree removal who are interested in producing firewood would be similar to producers surveyed who bought standing timber, hauled it to a processing location, processed it, and either delivered it or had consumers pick it up. Table 2 summarizes the information in Table 1 for some of these types of firewood production operations. Notice that the worst combinations use a pickup truck to haul and deliver wood. The best combination shown uses a mid-size truck to haul and a pickup truck to deliver, which takes advantage of the higher prices per cord received when selling wood by the pickup truck load.

Many arborists involved with tree removal have several advantages over the producers described in this paper. Their wood is not purchased but is a byproduct of their other business. Hauling costs are less because it is usually necessary to haul trees from the site. In fact, the only hauling cost

Table 1. Average costs and prices per cord for selected equipment and methods.

Item	*Costs per cord*				*Prices per cord*
	Raw material	*Hauling*	*Delivery*	*Processing*	
Hardwood stumpage	4.00				
Hardwood logs delivered	27.75				
Mid-size truck[1]		10.42	13.84		87.80
Pickup truck[2] /Van		43.46	40.16		117.53
Chainsaw-Hand tools				34.23	
Chainsaw-Hydraulic/ mechanical splitter				28.86	

[1]Includes dump trucks; 1 cord trucks; 1, 1.5, and 2 ton trucks

[2]Includes pickup trucks with 6, 6.5, and 8 foot beds

Table 2. Estimated costs and revenues for various types of firewood production operations.

Type of firewood operation[1]			*Costs and revenues per cord*		
Hauling (truck size)	*Delivery (truck size)*	*Process*[2] *method*	*Total cost*	*Total revenue*	*Net revenue*
Pickup	Pickup	C-HT	121.85	117.53	-4.32
Pickup	Pickup	C-HS	116.48	117.53	1.05
Mid-size	Pickup	C-HT	88.81	117.53	28.72
Mid-size	Pickup	C-HS	83.44	117.53	34.09
Mid-size	Mid-size	C-HT	62.49	87.80	25.31
Mid-size	Mid-size	C-HS	57.12	87.80	30.68

[1] All operations listed purchase standing timber at $4.00 per cord.

[2] Codes: C-HT = Chainsaw-hand tool splitting
C-HS = Chainsaw-hydraulic splitter

attributable to firewood production would be any additional cost due to the firewood operation (e.g. firewood processing location is farther than normal disposal location).

Arborists involved with tree removal have another alternative to the labor intensive activity of firewood processing. Trees removed can be sold to other firms for processing and retailing. In the Greenville study, 29% of the responding producers purchased logs at an average price of $27.75 per cord. It is quite likely that many of these types of firms would be willing to purchase for a slightly lower price, the odd shapes and sizes resulting from tree removal. It is obvious from the economic analysis that many small firms place a low value on their time and equipment (Table 2 shows that pickup truck hauling and delivery operations cannot pay the $5.00 wage rate and/or the standard equipment rates used in the analysis). These types of firms are probably not very selective in their choice of raw material and may be willing to take odd sizes as well as small branches. Some of the firms studied sold pine as well as hardwoods.

For those involved with tree removal who must haul their waste to a landfill and pay disposal fees, the firewood business can be especially attractive. Disposal fees at the Greenville County landfill are $.90 per cubic yard. Eliminating this cost and selling the waste can be an excellent means of streamlining an operation. Even if the waste were given to a firewood producer on the condition that he take all species and sizes (e.g., all waste material), the arborist would benefit.

Conclusion

Firewood production in the study area is primarily a one- to two-person part-time operation. It is a chainsaw, hydraulic or manual (hand tool) splitter, and pickup truck operation. It is disorganized, an industry in its infancy.

There are many opportunities for growth in the industry in areas such as the one studied. The industry could continue to grow as it has, with small pickup truck firms. Others, such as firms involved with tree removal, can become more involved with firewood production. Market organization and centralization of selling lots would very likely reduce retailing overhead. Packaging firewood for customer pickup could help reduce delivery costs and increase the price per cord of wood sold.

People who can attribute part of their hauling cost to another business have an advantage in the firewood business, whether they process and retail firewood or wholesale wood to others for processing.

Assistant Professor of Forestry
Clemson University
Clemson, South Carolina 29631