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The market for FIREPLACE WOOD in an urban area of Connecticut

by George S. Nagle and Robert S. Manthy

The Authors

GEORGE S. NAGLE is a graduate student in the school of Forestry, Yale University, where he is working toward a Ph.D. degree in forestry economics. A Canadian, he received a Bachelor's degree from the University of British Columbia and a Master's degree from Yale University. He has worked with forest industry and consulted in British Columbia and Pakistan.

ROBERT S. MANTHY is an economist in the Division of Forest Economics, Recreation, and Wildlife Habitat Research at the Northeastern Forest Experiment Station. A project leader for research in the economics of government forestry programs, he received his Bachelor's degree in forestry and Master's and Ph.D. degrees in forestry economics from Michigan State University.

The market for FIREPLACE WOOD

In an urban area of Connecticut

The Most Important Timber Product

FUELWOOD is Connecticut's most important timber product. Nearly two-thirds of the State's total roundwood output is fuelwood. In 1962 some 181,000 cords of fuelwood were produced from the State's forest lands. This compares with the sawlog harvest of 30 million board feet (approximately 60,000 cords) and a pulpwood cut of 26,000 cords (U. S. Forest Service 1965). And this is not all: besides the 181,000 cords produced as fuelwood, the equivalent of 90,000 cords of residues from wood-processing plants also enters the Connecticut fuelwood market.

Before World War II, fuelwood was used extensively as an industrial fuel and for domestic heating and cooking purposes. Since the war, coal, oil, electricity, and natural and manufactured

gases have replaced nearly all of the wood used as a basic fuel in home and industry. A few rural homes are still heated by fuelwood, but they are becoming increasingly rare (U. S. Bureau of Census, 1960).[1] The use of wood as an industrial fuel is limited mainly to the forest-products industries.

Despite the declining importance of wood as a basic fuel, the production of fuelwood in Connecticut has remained nearly constant over the past decade. The declining use of fuelwood in its more traditional markets has been offset by an increase in the consumption of fireplace wood. This has been brought about primarily by an ever-increasing number of fireplaces in new homes.

Because fireplace wood has become the most important timber product of Connecticut's forests, a study was made to obtain basic information about this aspect of the State's forest economy. Emphasis was placed on sources of supply and marketing practices.

The area selected for study was the New Haven metropolitan area and the surrounding suburban communities, a total area of about 20 square miles. This area has undergone rapid growth in the construction of single-family dwellings, most of which have fireplaces.

Data were obtained from an informal market survey of individuals and firms who handle fuelwood on a commercial basis in the study area. The survey was conducted in the summer of 1964.

In surveying the market, an attempt was made to contact all fuelwood sellers who sold more than 25 cords of fuelwood during the 1963-64 fall and winter fireplace season. Individuals and firms who sell smaller amounts were sampled only to the extent necessary to obtain a reliable indication of the nature of their operations.

Twenty-four firms were surveyed. They account for about one-half of the fuelwood sellers in the area, and handle an estimated 70 percent of the firewood sold to consumers in the New Haven area.

[1] An indication of the declining importance of fuelwood in rural communities is the volume of fuelwood cut by farmers. In 1950 Connecticut farmers harvested 57,000 cords of fuelwood from their woodlots; in 1954 they harvested 43,000 cords, and in 1959 they harvested 19,000 cords.

The Primary Demand

Consumer demand for firewood in a modern city is bound up with the history of this ancient product. An open fire has been a sacred object, a festive symbol, and the focal point of family and community life. Until recently in human history the main utility of an open fire has been heat. In today's centrally heated homes, heat can be obtained more conveniently and cheaply from other fuels. Yet people want and will pay for hearth fires. The fireplace and firewood are a luxury or entertainment item in today's market.

The urge to own a fireplace apparently is quite strong. The traditional association of hearth and home still affects a majority

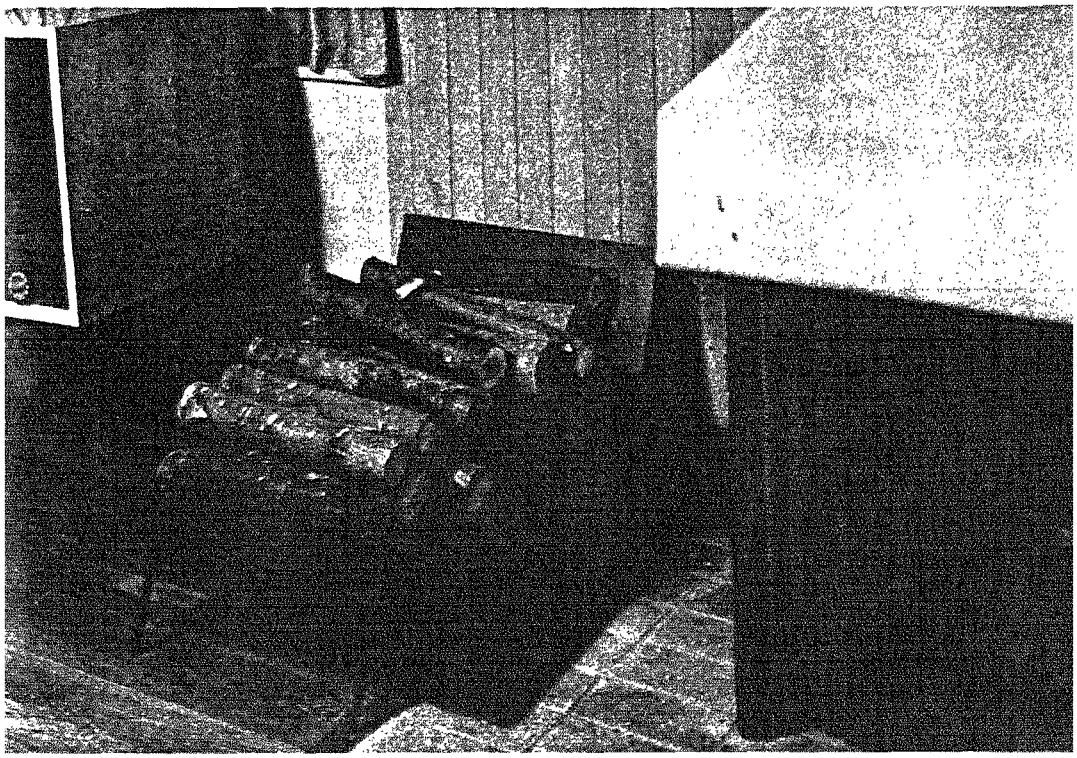

Figure 1.—Today's fireplaces require relatively small sticks of wood. In Connecticut the usual fireplace log is 20 inches long and not greater than 6 inches in diameter.

of prospective house-buyers, according to New Haven real estate dealers. It costs from $500 to $1,500 to add a fireplace to a house, and the property tax assessment rises accordingly. One realtor estimated that in the area 80 percent of the new homes that cost over $23,000 have at least one fireplace.[2]

In 1964 an estimated 3,000 standard cords of fuelwood were consumed in the New Haven area by individual homeowners who burn wood in home fireplaces.

In this area, fireplace wood is air-dried hardwood, approximately 20 inches long and split at least once if over 6 inches in diameter (fig. 1). Oak, maple, and yellow-poplar are the most common species. Applewood and hickory are occasionally marketed separately because of their unique burning properties, but the volumes involved are not large.

Nearly 80 percent of the fireplace wood marketed in the New Haven area is sold in 1- or ½-cord units. Twenty percent is marketed in small units such as a "thrown pickup-load", a "trunkload", or a 15-to-20-stick "bundle". For cord and half-cord sales, the cubic volume of the cord corresponds to the standards defined by the Connecticut Bureau of Consumer Protection. For the usual 20-inch stick, the standard cord is defined as 104 cubic feet of "compactly piled wood". By law, the Bureau's definition of a standard fireplace cord is supposed to be used in all fuelwood sales, even for the smallest fraction of a cord. In practice, sales of trunkload, bundle, and occasionally pickup-load lots are completed without reference to the fractional cord volumes involved.

The average fireplace owner uses his fireplace from mid-September to mid-March, consuming about 1 standard cord of fuelwood. The heaviest use occurs on weekends and between Thanksgiving and New Year's Day.

About this average is a wide range. At one end of the scale are those who burn a few sticks of wood during exceptionally cold weather or on special occasions and holidays. Their total

[2] According to a recent survey of building firms, nearly all new homes in the Northeast priced over $18,000 have fireplaces (House and Home, 1964). In 1960 the average value of single family-owned homes in Connecticut was $16,000. Most new homes were priced significantly above this value (U. S. Bureau Census 1960).

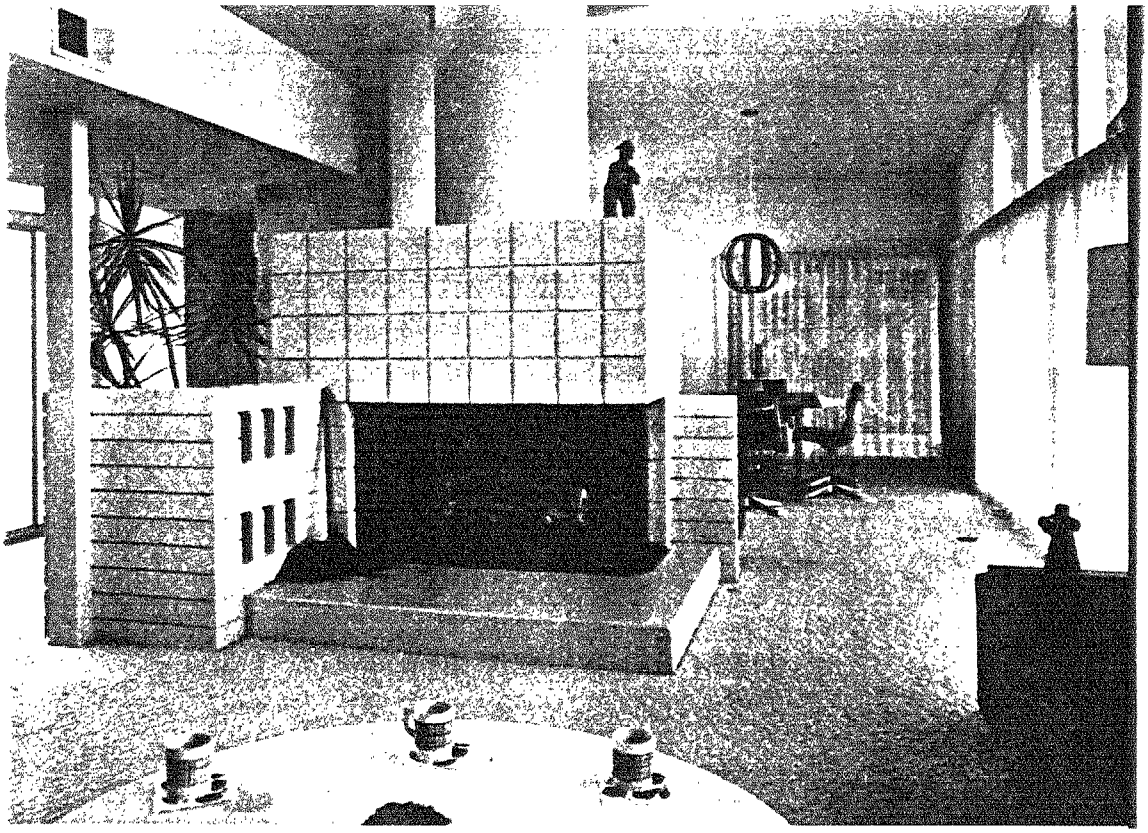

Figure 2.—In today's centrally heated houses a fireplace is a luxury that is often used primarily as an item of decor.

annual consumption is less than one-fourth of a standard cord. Among this group are those who derive most of their pleasure from using their fireplace as an item of decor rather than as a hearth (fig. 2). At the other end of the range is the consumer who uses his fireplace extensively. He consumes 2 or more cords of wood per year.

The size of individual firewood purchases is determined primarily by volume of total seasonal consumption and the availability of storage space. The homeowner who uses his fireplace only on special occasions normally purchases wood in small units. Typically, a bundle or trunkload of wood is purchased for each such special occasion. Consumers who use their fireplaces more frequently purchase in larger units. Those who have the room to store a full cord (8 feet x 4 feet x 40 inches) normally pur-

chase a cord at a time. Those who have more limited facilities purchase in ½-cord units. Nearly 80 percent of consumer purchases are made in cord or half-cord units.

There are few substitutes for commercially produced fireplace wood in the New Haven area. Few consumers cut their own fireplace wood. Many do not have a source of wood. Those that do usually find it financially unprofitable to use a power saw,[3] or physically inconvenient to use hand tools. Occasionally consumers are able to obtain fuelwood from land-clearing operations, but this source is usually limited to the landowner who is clearing a residential lot.

Sawmill residues provide a limited substitute, but are usually considered inferior to round or split wood. Though fireplace logs fabricated from sawdust and wood chips are common in some sections of the country, they have not been successfully marketed in the New Haven area.

Suppliers of Fireplace Wood

About 50 individuals and firms handle fireplace wood on a commercial basis in the New Haven area. Nearly 90 percent of these firms are retailers; their primary sales outlet is the final consumer. The remaining firms are wholesalers; the majority of their sales are made to retailers.

Without exception, both retailers and wholesalers rely on some other trade or occupation for a livelihood. They handle fireplace wood on a part-time basis and as a supplemental source of income.

Three-fourths of the suppliers are primarily engaged in occupations having an easily seen association with fuelwood: gardening and landscaping, land-clearing, commercial tree service, operation of nurseries and of garden shops. The remaining firms are engaged in primary occupations not normally associated with trees or fuelwood. Their relationship with fuelwood is generated

[3] A small power saw retails for about $200. At $3 per hour or $20 per day, renting a saw is expensive.

from their secondary occupations. Typical of this class of supplier is the moonlighting factory worker who removes trees from potential or existing house lots for a fee.

Retailers

Two classes of retailers operate in the New Haven area: producer-retailers and merchant-retailers. Producer-retailers engage in some phase of the manufacture of fireplace wood. Merchant-retailers purchase fully seasoned merchantable fireplace wood from wholesalers (or producer-retailers who also function as wholesalers) and sell to consumers without further processing of the same wood. A few producer-retailers also purchase wood from wholesalers, but the wood so obtained is not a salable product. It requires further processing, normally bucking and splitting.

In terms of consumer sales, producer-retailers are the most important. Ninety percent of the fuelwood purchased by consumers is obtained from retailers who undertake some phase of the fuelwood manufacturing process. Merchant-retailers handle the remaining 10 percent.

Producer-retailers.—Eighteen producer-retailers were surveyed. All of them undertake the entire fuelwood manufacturing and marketing process for at least some of the wood they handle. The retailer fells the trees from which fireplace wood is eventually derived, cuts felled trees into bolts, cuts the bolts into fireplace lengths, splits the larger bolts, and air-dries the manufactured product for 9 months to a year.

A few of the larger producer-retailers also purchase hardwood bolts from firewood wholesalers. With few exceptions, however, the amount of wholesaler-supplied wood is small. The exception is the largest fireplace wood seller in the New Haven area. The majority of this firm's raw material is purchased from a wholesaler in the form of green 5-foot bolts.

Producer-retailers undertake to manufacture the fireplace wood for a variety of reasons. A few of the larger retailers do so primarily because they feel that it is more profitable to undertake the manufacturing process themselves than to purchase a manufactured product from an intermediate market agent. Less than

10 percent of the New Haven retailers fall in this class, but they account for nearly 60 percent of the wood retailed in the area. This type of retailer normally markets 50 or more cords per year. Fifty percent of his wood supply comes from tree-removal operations undertaken in the course of his normal activities. The remaining half is obtained from wholesalers in the form of green 5-foot bolts, or occasionally as stumpage.

More common is the retailer who manufactures firewood for other reasons. Normally the source of raw material for this second class of retailer is trees that have been cut in small land-clearing or tree-removal operations.

For the latter group, the attraction of the retail firewood market is not based on the profit to be derived from the margin between conversion costs and retail prices. Nor is it based on the availability of a free wood supply. These firms are active in the firewood market primarily because they are periodically underemployed in their primary occupation. Firewood manufacture, consisting primarily of bucking and splitting of bolts removed from the site of tree felling, provides productive work during slack periods.

Merchant-retailers.—The three merchant-retailers sampled account for nearly all of the wood handled by this type of marketing agent in the New Haven area. The primary occupation of the retailers sampled lends itself to firewood retailing. Two operate nurseries and garden-supply stores; the third runs a hardware store.

Table 1.—Size class of sampled fuelwood retailers, 1963-64

Size class (cords sold)	Number of retailers
25 or less	10
26 - 50	4
51 - 100	2
More than 100	4
Volume not reported	1
Total	21

These firms retail firewood primarily because they operate the type of establishment at which consumers expect to be able to purchase wood. The incentive for handling wood is simply the profit to be derived from the retail operation.

Procurement and motivation aside, the only difference of consequence between these firms and their producer-retailer counterparts is size of operations. The average merchant-retailer sells 75 cords of fireplace wood per season. The average for producer-retailers is 25 cords.

Sales.—Retailer operations range in size of sales from less than 5 cords per season to more than 500 cords (table 1). A relatively small number of firms account for the majority of sales. Four of the 21 retailers sampled handled more than 100 cords per season. In aggregate they account for two-thirds of the wood sold by the sampled firms. Six firms accounted for an estimated 60 percent of the 3,000 cords of fireplace wood marketed in the New Haven area in the 1963-64 season.

Strong seasonal trends are evident in retail firewood sales. Producer-retailers who market more than 50 cords per season begin selling wood in early September. Sales climb to a peak in December, and gradually fall off until the end of the sales season in early March. Merchant-retailers and producer-retailers who handle less than 50 cords per season report a more limited sales period. For them, sales begin in late November and drop off rapidly after New Year's Day.

Eighty percent of the fuelwood sold by producer-retailers is sold delivered to the consumer's residence in ½- and 1-cord units. Producer-retailers handling more than 50 cords per season specialize in these large unit sales, although small volumes of wood are sold at their place of business in smaller units such as bundles or trunkload units. Occasionally retailer-producers also sell to merchant-retailers, but this is not a regular practice and the volume is small.

Two of the merchant-retailers surveyed specialize in sales of bundles and other small units. The third sells most of his wood on a cord basis. Sales of smaller units are made at the retailer's place of business; cord sales are sold on a delivered basis.

inducing an inrush of new supply. This, he feels, could jeopardize his market position and eventually result in market instability.

Other large-volume suppliers agree that a substantial price rise would not affect the amount of wood consumed, but disagree with the leader about the possible destabilizing effect of a substantial price rise. Nevertheless, none feel that they are in a favorable enough market position to increase their prices substantially above that of the leader. Also, each of the larger retailers agree that any serious effort to increase their market share by price-cutting would lead to a mutually detrimental price war.

The larger retailers may also be inclined to follow the leader's price because they experience about the same or lower costs of production. Each obtains about half of his wood in the form of 5-foot bolts from the same wholesaler, the remainder from small land-clearing operations. In addition, most of the major suppliers (other than the leader) use their own labor in the manufacturing process and therefore experience lower out-of-pocket production costs than those of the price leader.

This is not to say that the price of wood is stable through time. Over the past 5 years, fuelwood prices have increased 30 percent. The explanation offered by the price leader is rising labor costs, and it is supported by other firms serving the retail market. In fact, a common complaint among larger retailers is that labor costs have increased faster than the market price, and that their margin for profit has correspondingly decreased.

Non-price competition is also limited, but most sellers make of it what they can. Smaller retailers sometimes attempt to push sales with extra services such as free kindling.

Wholesale prices.—The standard wholesale price for 5-foot bolts is $14 per cord delivered to a retailer's yard or $10 per cord at roadside. The wholesale price for delivered fully manufactured and seasoned firewood ranges between $20 and $22 per cord.

Costs

Most retailers and wholesalers do not keep full records of their costs. However, one wholesaler and several of the larger pro-

ducer-retailers have supplied cost data that may be representative of the more efficient operators. According to these estimates, the total cost of producing a merchantable cord of wood at the going wage rate for woods labor is $19. This consists of $10 for the production of 5-foot bolts, $4 for delivery to the yard, and $5 for handling, bucking, and splitting the 5-foot bolts.

Seasoning costs are excluded from these calculations, but obviously are not zero. The investment in stored wood represents an opportunity cost. The size of these costs varies with the size of the operations, and no meaningful average can be derived.

Stumpage is considered a free good and therefore is also excluded from cost calculations. Producer-retailers and wholesalers obtained their raw material as a byproduct of other operations. The salvaged wood has no other known economic use. One wholesaler occasionally sells stumpage to firewood sellers who attempt to supplement other sources of supply. However, the nominal stumpage price he is able to extract from these sales is based more on his ability to provide a stable annual supply than on wood scarcity.

The above costs probably are not representative of most of the fuelwood handlers. Only those reporting costs actually pay the going wage rate for woods labor.

Income derived from firewood is either an extra coming out of some related activity such as land-clearing, nursery work, or noncommercial forest-type conversion, or is handled as a secondary or moonlighting activity. Most firewood operations involve only one or two men, and labor is often devoted to firewood because it is underemployed in other activities. Thus the full cost of firewood marketing and production is often an opportunity cost or is borne by some other activity.

Comparisons of Costs and Prices

Costs of fireplace wood procurement and manufacture are compared with prices in table 2. The margins and profit-opportunity ratios shown should be interpreted with caution. On the one hand, cost data are heavily weighted by the experience of the larger and presumably more efficient operators. On the other

Table 2.—Margin and profit-opportunity ratio for retailing and wholesaling fireplace wood in the New Haven area, 1964

Agent and product	Price received	Manufacture or procurement cost	Marketing margin	Profit-opportunity ratio[1]
	Dollars per cord			*Percent*
Retailer:				
Bundle sales	$30.00-50.00	$19.00	$11.00-31.00	37-62
Cord Sales	26.00	23.00	3.00	13
Wholesaler:				
Manufactured cord	22.00	21.00	1.00	5
5-foot bolts	14.00	([2])	—	([3])

[1] Profit-opportunity ratio is the ratio of margin to price received.
[2] Withheld to avoid disclosure.
[3] Less than 5 percent.

hand, many retailers and wholesalers use their own labor in the fuelwood-manufacturing process. The out-of-pocket production expenses for such firms are probably much lower than those shown.

Despite these limitations, the margins shown indicate the relative profitability of handling fireplace wood at different levels of involvement in marketing and manufacturing. The greatest opportunity for profit appears to be in retailing of small bundles. Such sales now account for only 10 percent of the firewood marketed in the area. Wholesalers whose principal product is green 5-foot bolts have the smallest per-cord profit-opportunity ratio.

Summary and Conclusions

The principal consumer of fuelwood in the New Haven area is the individual who burns wood in his home fireplace. In the fall and winter of 1963-64, some 3,000 cords (104 cubic feet per cord) of fireplace wood were consumed in the area. The firewood market is supplied by retailers and wholesalers who are part-time operators primarily engaged in other occupations. Ninety percent of the retail sales are made by firms that process at least a portion of the wood they sell; 10 percent is by firms that purchase merchantable wood from wholesalers.

The retail price for fuelwood is fairly uniform throughout the New Haven area, largely because of an informal agreement among retailers to follow the pricing policy of the largest retailer in the area. No attempt was made to judge the fairness of the market price, but substantially higher prices in neighboring communities indicate that the consumer does not suffer under the present pricing system.

Cost and price comparisons show that cost-price margins are greatest for retailing of small bundles of wood and least for the wholesaling of green 5-foot bolts. However, the major source of returns for most fuelwood sellers is not found in the marketing margin but rather in the return to contributed labor.

Wood that enters the New Haven fireplace wood market is salvaged from land-clearing, tree removal, or noncommercial forest-management activities of the seller. More than half of the firewood sold in the area is manufactured by producer-retailers who obtain the majority of their raw material from their own land-clearing or tree-removal activities. About 45 percent is sold by retailers who purchase hardwood bolts from wholesalers. The wholesaler in turn obtains his wood as a byproduct of other activities. Only an insignificant amount of firewood comes from stumpage harvested specifically for firewood. When this does occur, it is done only to supplement other wood sources. For the most part, raw material for fireplace wood is widely available and is a free good. It has no known alternative use.

Sixty percent of the firewood retailed has been processed by firms that handle more than 50 cords of wood per season and undertake fuelwood manufacture and marketing as a regular and planned activity. The remainder has been processed by smaller volume retailers during lulls in normal activities.

It seems probable that, as consumer firewood requirements continue to increase, the larger scale retailers will capture an even greater share of the New Haven area market. The smaller retailer is engaged in firewood production and marketing primarily as a means of utilizing the salvagable byproduct of his tree-removal operations and as a means of providing productive work for underemployed labor. The raw material available to these firms is limited by the extent of their tree-removal operations. This source could be supplemented by purchasing from wholesalers, but this is unlikely under present market conditions. With the current market structure and pricing method, a substantial increase in market price is improbable, and the smaller operator is not likely to emphasize firewood production at the expense of his regular, more profitable activities.

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