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THE FIREWOOD INDUSTRY IN GEORGIA

A STUDY OF ITS CHARACTERISTICS AND NEEDS

PREPARED BY

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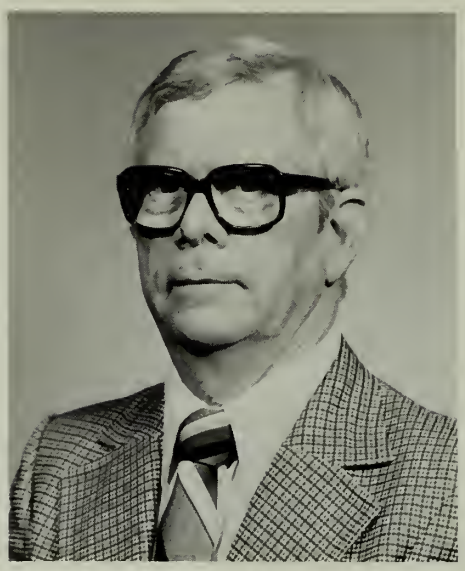

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BACKGROUND AND PURPOSE

The recent growth in and the emphasis on the use of wood as an energy source for home heating has resulted in a number of studies on the demand for firewood and the characteristics of households that use it. Although not complete, there is a large base of data on who uses firewood, how much is used, and for what purpose. On the other hand, there is a minimum of information dealing with the industry that supplies the firewood for home consumption.

The Georgia Forestry Commission in its continuing program to promote the forestry industry recognized the need to better utilize those wood products that were the residue of some forestry operations and which frequently went to waste. Because these residue products were frequently highly suitable for firewood, the Commission explored ways of encouraging the use of firewood as a home energy source.

A study was completed on the demand for firewood by households in Georgia. The study gave indications that the supply of firewood was not uniform and that prices varied widely throughout Georgia. On the assumption that the use of firewood would be increased if households were assured of a ready supply at reasonable prices, the Commission elected to make a study of the firewood industry, the problems it faces, and what, if any, programs could be initiated to promote the growth of the industry.

The Georgia Forestry Commission and the Contract Research Division, College of Business Administration, Georgia State University conducted this study of the firewood industry. It involved personal interviews with 218 firewood dealers throughout Georgia. The interviews were conducted in December 1980 and January 1981. The data that were collected pertained to the operations of the firms in 1980.

SURVEY FINDINGS

General

This research report presents data on a number of factors that were explored during the interviews with 218 firms engaged in the business of selling firewood. Before presenting the detailed data on all of the factors, if will be useful to set forth a composite picture of a typical firm in the industry.

a. The firm sells firewood only at retail.
b. It is in the firewood business on a part-time basis only and operates in the months from October through February.
c. The firm obtains trees for firewood from within a 10 mile radius of the firm.
d. Most firewood is sold and delivered to homeowners in one-half cord loads.
e. Only 4 percent of the firms sell firewood at a discount in the non-heating season, and 40 percent increased their prices from 1979 to 1980 by generally 10 to 15 percent.
f. The median number of cords sold per firm per year was 40 and the average price was 82 dollars a cord.
g. Eighty-four percent of the firewood is sold in the 5-month period October to February.
h. Nearly all firms have only one or two employees.
i. The direct cash cost of preparing a cord of firewood was reported as 30 dollars or less by 55 percent of the firms.

Detailed Analysis and Data Format

The following analysis of the information on the factors affecting the firewood industry is presented for the most part for the State of Georgia as a whole. The assumption was made however that there might be significant differences between the firms in the Northern counties and those in the Southern counties. In view of that possibility, the State was divided into regions. The 59 most Northern counties are in the Northern Region and are those counties in Georgia Forestry Commission Districts 1, 2, 3, 4, 5, 14, and 15. The remaining 100 counties are in the Southern Region. Separate data tables will be presented for the two regions when there is a notable difference in industry characteristics between them.

Type of Firm - Wholesale or Retail

Selling firewood is primarily a retail business. As shown in Table 1, 79.7 percent of all firms sell at retail while only 19.4 percent sell both retail and wholesale. Two firms reported they were wholesale only. Both regions reported similar data.

Monthly Participation in Firewood Business

One of the more significant aspects of the firewood industry on which additional information was needed was the proportion of firms that was in business during each month of the year. It could be anticipated that the level of sales would be lower in non-heating months, but the number of firms that operated during those months was unknown. Each firm was asked to indicate for each month whether it was in business full-time, part-

TABLE 1

DOES THE FIREWOOD FIRM SELL RETAIL OR WHOLESALE

TYPE OF SALES	NUMBER OF FIRMS	PERCENT
RETAIL	173	79.7
WHOLESALE	2	.9
BOTH	42	19.4
TOTAL	217	100.0

TABLE 2A

MONTHLY PARTICIPATION IN FIREWOOD BUSINESS ON FULL-TIME BASIS
NUMBER OF FIRMS ENGAGED ON FULL-TIME BASIS

	GEORGIA		NORTHERN REGION		SOUTHERN REGION	
MONTH	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
JANUARY	64	30.2	40	36.4	24	23.5
FEBRUARY	64	30.2	40	36.4	24	23.5
MARCH	47	22.3	35	32.1	12	11.8
APRIL	31	14.7	28	25.7	3	2.9
MAY	31	14.7	28	25.7	3	2.9
JUNE	31	14.7	28	25.7	3	2.9
JULY	31	14.7	28	25.7	3	2.9
AUGUST	31	14.7	28	25.7	3	2.9
SEPTEMBER	39	18.5	33	30.3	6	5.9
OCTOBER	45	21.3	35	32.1	10	9.8
NOVEMBER	62	29.4	41	37.6	21	20.6
DECEMBER	67	31.6	41	37.3	26	25.5

(NOTE: Percent figures are based on the number of reporting firms for each item of data for the region concerned. This sometimes results in a different percentage for the same number of firms. This will also be the case in subsequent tables as some firms did not respond to every item.)

time, or not in business for that month.

The data for each region were considerably different; therefore Table 2 shows the results for Georgia and for each of the regions.

The Northern Region had a greater proportion of firms that were in business on a full-time basis. This was true for each month of the year. For firms that were in business on a part-time basis, the difference between the regions was not as great but the Southern Region had the largest proportion on a part-time basis for 10 of the 12 months. The Southern Region also had the greatest proportion of firms that reported they were not in business at some time. This was true for 9 of the 12 months.

One aspect of particular interest concerns the number of firms that reported they were in business on a full-time basis throughout the year. Of the 30 firms that so reported, 27 of them were in the Northern Region with only 3 in the Southern Region. The firewood business is predominantly a part-time business throughout Georgia, but this is especially so in the Southern Region.

TABLE 2B

MONTHLY PARTICIPATION IN FIREWOOD BUSINESS ON PART-TIME BASIS

NUMBER OF FIRMS ENGAGED ON PART-TIME BASIS

	GEORGIA		NORTHERN REGION		SOUTHERN REGION	
MONTH	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
JANUARY	132	62.3	59	53.6	73	71.6
FEBRUARY	125	59.0	54	49.1	71	69.6
MARCH	96	45.5	45	41.3	51	50.0
APRIL	53	25.1	26	23.9	27	26.5
MAY	43	20.4	20	18.3	23	22.5
JUNE	43	20.4	22	20.2	21	20.6
JULY	44	20.9	22	20.2	22	21.6
AUGUST	51	24.2	28	25.7	23	22.5
SEPTEMBER	71	33.6	38	34.9	33	32.4
OCTOBER	121	57.3	56	51.4	65	63.7
NOVEMBER	138	65.4	64	58.7	74	72.5
DECEMBER	140	66.0	66	60.6	74	72.5

TABLE 2C

NON-OPERATING MONTHS FOR FIREWOOD FIRMS

	GEORGIA		NORTHERN REGION		SOUTHERN REGION	
MONTH	NUMBER OF FIRMS	PERCENT	NUMBER OF FIRMS	PERCENT	NUMBER OF FIRMS	PERCENT
JANUARY	16	7.5	11	10.0	5	4.9
FEBRUARY	23	10.8	16	14.5	7	6.9
MARCH	68	32.2	29	26.6	39	38.2
APRIL	127	60.2	55	50.5	72	70.6
MAY	137	64.9	61	56.0	76	74.5
JUNE	137	64.9	59	54.1	78	76.5
JULY	136	64.5	59	54.1	77	75.5
AUGUST	129	61.1	53	48.6	76	74.5
SEPTEMBER	101	47.9	38	34.9	63	61.8
OCTOBER	45	21.3	18	16.5	27	26.5
NOVEMBER	11	5.2	4	3.7	7	6.9
DECEMBER	5	2.4	3	2.7	2	2.0

TABLE 3

REASONS FOR NOT BEING IN FIREWOOD BUSINESS
ON A FULL-TIME BASIS THROUGHOUT THE YEAR

GEORGIA

REASONS	NUMBER FIRMS	PERCENT
a. NO DEMAND FOR FIREWOOD IN SUMMER	109	69.0
b. HAVE OTHER BUSINESS INTERESTS	68	43.0
c. PERSONAL HEALTH PROBLEMS	1	0.6
d. BUSINESS NOT WELL ENOUGH ESTABLISHED	2	1.3
e. NEED YEAR-ROUND INDUSTRIAL CUSTOMERS	2	1.3
f. NOT ENOUGH MONEY TO BUY EQUIPMENT	8	5.1
g. SHORTAGE OF WOOD AVAILABLE TO ME	5	3.2
h. TOO HOT IN SUMMER	6	3.8
i. ADEQUATE LABOR IS NOT AVAILABLE	1	0.6

Reasons for Not Being in Firewood Business on a Full-Time Basis Throughout the Year

Any proposed program to expand the firewood industry must evaluate the reason why the present firms in the industry do not operate on a full-time basis throughout the year. Each firm that did not so operate was asked why they did not do so.

The responses were similar in both regions and centered predominantly around two reasons: there was little demand for firewood in the summer, and the operators had other business interests. The other business interest was frequently reported to be farming. Table 3 shows the frequency of the reasons reported.

Sources of Wood Used by Firewood Firms

Firms in the firewood industry obtain their wood from a variety of sources with four sources being utilized most frequently. Both regions were similar in the wood sources reported. Although a specific question was not asked on the subject, respondents frequently voluntarily stated that being in the firewood business was a result of being in the tree-surgeon or tree-removal business. They sold the trees they removed. These responses were generally entered under the construction site or storm damage category of wood source. Table 4 presents the sources of wood reported by the firms.

TABLE 4

SOURCES OF WOOD REPORTED BY FIREWOOD FIRMS

SOURCES OF WOOD	NUMBER FIRMS	PERCENT
CUT FROM OWN LAND	77	35.6
BUY ON THE STUMP FROM PRIVATE LANDOWNERS	63	29.2
BUY ON THE STUMP FROM STATE OR NATIONAL FORESTS	2	0.9
BUY IN LOG FORM DELIVERED TO MY WOODYARD	32	14.8
BUY BLOCK OR SPLIT WOOD DELIVERED TO MY WOODYARD	21	9.7
GET TREES THAT ARE CLEARED FROM CONSTRUCTION SITES OR STORM DAMAGE	66	30.6
FROM THINNING AND TIMBER CUTTING	57	26.4

TABLE 5

PROBLEMS REPORTED BY FIRMS IN OBTAINING WOOD

REASON	GEORGIA NUMBER FIRMS	GEORGIA PERCENT	NORTHERN REGION NUMBER FIRMS	NORTHERN REGION PERCENT	SOUTHERN REGION NUMBER FIRMS	SOUTHERN REGION PERCENT
a. FINDING ENOUGH WOOD	27	52.9	20	60.6	7	38.9
b. NOT ENOUGH TRUCKS	2	3.9	1	3.0	1	5.6
c. CANNOT CUT IN WET WEATHER	10	19.6	6	18.2	4	22.2
d. LACK OF LABOR	11	21.6	5	15.2	6	33.3
e. NOT ENOUGH EQUIPMENT	2	3.9	2	6.1	0	0.0
f. INCONSISTENCY OF SUPPLY	7	13.7	6	18.2	1	5.6
TOTAL	51		33		18	

(NOTE: Some firms reported more than one reason.)

Problems Reported in Obtaining Wood

A total of 51 firms reported one or more problems in obtaining an adequate supply of wood to sell as firewood. The most frequently cited reason was a general one of just not being able to find enough wood. Data are presented for each region as there was some difference between responses. These reasons are listed in Table 5.

Distance Traveled to Obtain Wood

Firms are apparently in fairly close proximity to available sources of wood. The availability of wood is uniform throughout Georgia as the distance traveled to obtain wood was very similar for both regions. Some 74 percent of firms reported they obtained their wood within a 20 mile radius. The distances shown in Table 6 represent the maximum one-way distance that firms said they generally traveled to obtain the wood they sold as firewood.

TABLE 6

MAXIMUM ONE-WAY DISTANCE TO SOURCE OF WOOD

GEORGIA

NUMBER OF MILES	NUMBER FIRMS	PERCENT
5 OR LESS	58	28.0
6 TO 10	47	22.7
11 TO 15	26	12.6
16 TO 20	22	10.6
21 TO 25	13	6.3
26 TO 30	18	8.7
31 TO 35	2	1.0
36 TO 40	2	1.0
41 TO 45	1	.5
46 TO 50	7	3.4
51 TO 55	0	0.0
56 TO 60	3	1.4
61 TO 65	1	.5
66 TO 70	1	.5
71 TO 75	2	1.0
OVER 75	4	1.9
TOTAL	207	100.0

This is one of many woodyards established in Georgia during recent years.

Size of Individual Firewood Sales

The amount of firewood that is sold per order in Georgia is predominantly one-half cord. This is followed by one-quarter cord and one cord. Firms were asked to state what percentage of their orders were for various amounts of firewood. Of the 213 responding firms, 86 or 40.4 percent said that over 75 percent of their orders were for one-half cord. The number of firms that reported over 75 percent of their orders were for amounts ranging from one-quarter to over 3 cords is shown in Table 7.

TABLE 7

SIZE OF INDIVIDUAL FIREWOOD SALES

FIRMS REPORTING THAT OVER 75 PERCENT OF ORDERS WERE FOR AMOUNTS SHOWN

SIZE OF ORDER	NUMBER OF FIRMS	PERCENT
ONE QUARTER CORD	26	12.2
ONE-HALF CORD	86	40.4
ONE CORD	17	8.0
ONE AND ONE-HALF CORD	2	.9
TWO CORDS	2	.9
THREE CORDS	2	.9
OVER THREE CORDS	6	2.8

Sales to Residential Customers and To Others

The sale of firewood by industry firms is almost entirely to residential customers. Of the 216 responding firms, 184 stated that over 95 percent of their sales were made to homeowners. This tends to support the comment made by two firms that if more industrial or commercial customers were available, they could operate on a year-round basis. The responses for Georgia are presented in Table 8.

Delivered Firewood and Sales at Wood Yard

In almost the same proportion that firewood was sold to homeowners rather than to other consumers, firewood is delivered to the customer rather than being sold at the wood yard. Of the 217 firms responding, 116, or 53.5 percent, reported that 96 to 100 percent of the firewood sold was delivered to the customer. It was reported by 10 percent of the firms, however, that 95 to 100 percent of their sales were made at the wood yard. The data on all firms are shown in Table 9. There was little difference in the data reported by the two regions.

TABLE 8

DISTRIBUTION OF SALES TO HOMEOWNERS AND OTHER CONSUMERS

	GEORGIA			GEORGIA	
PROPORTION OF WOOD SOLD TO HOMEOWNERS	NUMBER OF FIRMS	PERCENT	PROPORTION OF WOOD SOLD TO INDUSTRIAL FIRMS, STORES, ETC	NUMBER OF FIRMS	PERCENT
5 PERCENT OR LESS	1	0.5	5 PERCENT OR LESS	184	85.2
6 TO 10	4	1.9	6 TO 10	6	2.8
11 TO 15	0	0.0	11 TO 15	10	4.6
16 TO 20	0	0.0	16 TO 20	0	0.0
21 TO 25	1	0.5	21 TO 25	3	1.4
26 TO 30	0	0.0	26 TO 30	0	0.0
31 TO 35	0	0.0	31 TO 35	0	0.0
36 TO 40	1	0.5	36 TO 40	0	0.0
41 TO 45	0	0.0	41 TO 45	2	0.9
46 TO 50	4	1.9	46 TO 50	0	0.0
51 TO 55	0	0.0	51 TO 55	4	1.9
56 TO 60	2	0.9	56 TO 60	0	0.0
61 TO 65	0	0.0	61 TO 65	1	0.5
66 TO 70	0	0.0	66 TO 70	0	0.0
71 TO 75	0	0.0	71 TO 75	0	0.0
76 TO 80	3	1.4	76 TO 80	1	0.5
81 TO 85	0	0.0	81 TO 85	0	0.0
86 TO 90	10	4.6	86 TO 90	0	0.0
91 TO 95	6	2.8	91 TO 95	4	1.9
96 TO 100	184	85.2	96 TO 100	1	0.5
TOTAL	216	100.0	TOTAL	216	100.0

TABLE 9

REPORTED SALES OF FIREWOOD AT WOOD YARD AND DELIVERED TO CUSTOMER

PROPORTION OF WOOD DELIVERED TO CUSTOMER	REPORTING FIRMS GEORGIA NUMBER	PERCENT	PROPORTION OF WOOD SOLD AT WOOD YARD	REPORTING FIRMS GEORGIA NUMBER	PERCENT
5 PERCENT OR LESS	23	10.6	5 PERCENT OR LESS	116	53.5
6 TO 10	2	0.9	6 TO 10	10	4.6
11 TO 15	1	0.5	11 TO 15	17	7.8
16 TO 20	2	0.9	16 TO 20	2	0.9
21 TO 25	1	0.5	21 TO 25	7	3.2
26 TO 30	3	1.4	26 TO 30	12	5.5
31 TO 35	0	0.0	31 TO 35	3	1.4
36 TO 40	5	2.3	36 TO 40	0	0.0
41 TO 45	0	0.0	41 TO 45	2	0.9
46 TO 50	11	5.1	46 TO 50	0	0.0
51 TO 55	0	0.0	51 TO 55	11	5.1
56 TO 60	2	0.9	56 TO 60	0	0.0
61 TO 65	0	0.0	61 TO 65	5	2.3
66 TO 70	3	1.4	66 TO 70	0	0.0
71 TO 75	12	5.5	71 TO 75	3	1.4
76 TO 80	7	3.2	76 TO 80	1	0.5
81 TO 85	2	0.9	81 TO 85	2	0.9
86 TO 90	17	7.8	86 TO 90	1	0.5
91 TO 95	10	4.6	91 TO 95	2	0.9
96 TO 100	116	53.5	96 TO 100	23	10.6
TOTAL	217	100.0	TOTAL	217	100.0

Total Sales of Firewood

The total annual sales reported by firms were in some ways very similar between the two regions. In both regions 50 percent of the firms reported sales of 40 cords or less. In other words, the median annual sales reported was 40 cords.

The Northern Region had a greater number of firms that reported sales of 200 or more cords. This resulted in the situation where each region had a median of 40 cords per year but the Northern Region had an average of 155 cords and the Southern Region had an average of 62 cords. It will be noted in Table 10 that the Northern Region had 5 firms with sales of 1,000 or more cords while the Southern Region had only 1.

TABLE 10

TOTAL SALES OF FIREWOOD BY REPORTING FIRMS

TOTAL CORDS SOLD PER YEAR	NUMBER OF FIRMS REPORTING TOTAL SALES SHOWN					
	GEORGIA		NORTHERN REGION		SOUTHERN REGION	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
1 TO 10	23	13.8	11	12.8	12	14.8
11 TO 20	20	12.0	8	9.3	12	14.8
21 TO 30	23	13.8	14	16.3	9	11.1
31 TO 40	19	11.4	11	12.8	8	9.9
41 TO 50	23	13.8	10	11.6	13	16.0
51 TO 60	7	4.2	2	2.3	5	6.2
61 TO 70	5	3.0	1	1.2	4	4.9
71 TO 80	9	5.4	4	4.7	5	6.2
81 TO 90	2	1.2	1	1.2	1	1.2
91 TO 100	10	6.0	5	5.8	5	6.2
101 TO 125	6	3.6	3	3.5	3	3.7
126 TO 150	5	3.0	2	2.3	3	3.7
151 TO 175	0	0.0	0	0.0	0	0.0
176 TO 200	3	1.8	3	3.5	0	0.0
201 TO 250	1	0.6	1	1.2	0	0.0
251 TO 300	1	0.6	1	1.2	0	0.0
301 TO 400	3	1.8	3	3.5	0	0.0
401 TO 500	1	0.6	1	1.2	0	0.0
501 TO 750	0	0.0	0	0.0	0	0.0
751 TO 1000	2	1.2	2	2.3	0	0.0
1001 TO 1500	3	1.8	2	2.3	1	1.2
over 1500	1	0.6	1	1.2	0	0.0
TOTAL	167	100.0	86	100.0	81	100.0

Selling Price of Firewood

It was noted earlier that prices for firewood vary considerably in Georgia, and that a stable supply of firewood at reasonable prices might encourage the use of firewood as an alternative energy source. The following data will lend substance to the claim of wide price variations.

Firms were questioned as to the price charged for .25, .5, 1, 1.5, 2 and 3 cords of firewood. Although not all firms provided a price for each quantity, sufficient responses were received to provide a data base for evaluation. It should be noted that many firms are of such nature and size that they seldom if ever sell firewood in quantities of 1.5, 2, and 3 cords.

The data on the number of firms that sell the above amounts of firewood at the prices shown are presented in Table 11. Although the data shown are for Georgia they will suffice to demonstrate the variation in price for given amounts of firewood. There was a difference in prices between the two regions but such differences will be shown later.

Even with the wide price variations some evaluation can be made of the price structure in the two regions. First, all prices obtained for a quantity of firewood

TABLE 11

PRICE OF FIREWOOD FOR VARIOUS SIZE ORDERS IN GEORGIA

NUMBER OF FIRMS THAT REPORTED INDICATED PRICES FOR LISTED AMOUNT OF FIREWOOD

PRICE OF FIREWOOD IN DOLLARS	.25 CORD		.5 CORD		1 CORD		1.5 CORDS		2 CORDS		3 CORDS	
	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.
1 TO 10	6	7.1	3	1.9	0	0.0	0	0.0	0	0.0	0	0.0
11 TO 20	37	44.0	2	1.2	1	1.0	0	0.0	0	0.0	0	0.0
21 TO 30	27	32.1	40	24.8	0	0.0	0	0.0	0	0.0	0	0.0
31 TO 40	9	10.7	65	40.4	4	3.8	0	0.0	0	0.0	0	0.0
41 TO 50	5	6.0	26	16.1	8	7.6	1	3.8	0	0.0	0	0.0
51 TO 60			14	8.7	11	10.5	0	0.0	0	0.0	0	0.0
61 TO 70			8	5.0	19	18.1	0	0.0	0	0.0	0	0.0
71 TO 80			1	0.6	20	19.0	3	11.5	0	0.0	1	4.5
81 TO 90			1	0.6	13	12.4	3	11.5	0	0.0	0	0.0
91 TO 100			1	0.6	12	11.4	4	15.4	2	7.7	1	4.5
101 TO 110					4	3.8	7	26.9	1	3.8	0	0.0
111 TO 120					5	4.8	1	3.8	4	15.4	0	0.0
121 TO 130					1	1.0	1	3.8	1	3.8	0	0.0
131 TO 140					4	3.8	1	3.8	8	30.8	0	0.0
141 TO 150					3	2.9	2	7.7	4	15.4	2	9.1
151 TO 160							3	11.5	0	0.0	1	4.5
161 TO 170									0	0.0	0	0.0
171 TO 180									2	7.7	2	9.1
181 TO 190									0	0.0	1	4.5
191 TO 200									3	11.5	1	4.5
201 TO 210									1	3.8	7	31.8
211 TO 220											0	0.0
221 TO 230											2	9.1
231 TO 240											0	0.0
241 TO 250											0	0.0
251 TO 260											0	0.0
261 TO 270											1	4.5
271 TO 280											0	0.0
281 TO 290											0	0.0
291 TO 300											2	9.1
301 TO 310											0	0.0
311 TO 320											1	4.5
TOTAL	84	100.0	161	100.0	105	100.0	26	100.0	26	100.0	22	100.0

were added and then divided by the number of firms providing a price for that quantity. This average per firm was computed for each of the quantities under question. It will be noticed in Table 12 that the Northern Region reported a higher price for each quantity.

The averages shown in Table 12 were computed with the prices of all firms treated on an equal basis without regard to the quantity of wood actually sold. To establish a price more closely related to what most firewood was sold for it was necessary to weight prices by the quantity of wood sold at that price.

The quantity of wood most often sold was one-half cord; therefore, the price that a firm charged for one-half cord was weighted by the amount of wood sold by the firm. With this procedure, the average price for one-half cord of firewood was $47.08 for Georgia, $52.38 for the Northern Region and $33.68 for the Southern Region.

TABLE 12

AVERAGE SELLING PRICES FOR FIREWOOD

AVERAGE PRICE REPORTED FOR QUANTITY SHOWN

QUANTITY OF FIREWOOD	GEORGIA	NORTHERN REGION	SOUTHERN REGION
.25 CORD	$ 24.10	$ 26.80	$ 21.00
.5 CORD	39.70	44.10	34.60
1 CORD	81.80	89.30	69.10
1.5 CORDS	109.00	110.20	107.50
2 CORDS	146.20	150.30	140.50
3 CORDS	204.10	207.90	191.00

A pecan orchard becomes a massive woodyard as some wood is ricked for drying, while other wood is split and piled to await the stacking crew.

TABLE 13

DIRECT CASH COST OF PRODUCING ONE CORD OF FIREWOOD IN GEORGIA

DOLLAR COST TO PREPARE ONE CORD FIREWOOD	REPORTING FIRMS NUMBER	PERCENT
1 TO 5	6	4.3
6 TO 10	12	8.5
11 TO 15	18	12.8
16 TO 20	14	9.9
21 TO 25	13	9.2
26 TO 30	14	9.9
31 TO 35	8	5.7
36 TO 40	12	8.5
41 TO 45	6	4.3
46 TO 50	13	9.2
51 TO 55	4	2.8
56 TO 60	9	6.4
61 TO 65	4	2.8
66 TO 70	1	0.7
71 TO 75	3	2.1
76 TO 80	2	1.4
81 TO 85	1	0.7
86 TO 90	1	0.7
TOTAL	141	100.0

Price Changes

One final aspect of prices was investigated during the study. Firms were asked if their pricing structure included lower prices during the non-heating season. They were also questioned on changes in price between 1979 and 1980. This inflation price change did not apply to 44 firms that were in business for the first time in 1980.

Discounts for the non-heating season were reported by only 8 firms with one firm offering a 5 percent discount, 6 firms a 10 percent discount, and 1 firm a 20 percent discount.

Price increases between 1979 and 1980 were reported by 53 firms. Sixty-six percent of the increases were from 10 to 15 percent whereas 28 percent of the increases were from 20 to 30 percent.

Cost of Firewood To Firm

Firms were asked to provide information on the direct cash cost of preparing one cord of wood for sale as firewood. Costs to be included were limited to the direct expenses, such as cost of trees, labor, fuel, etc. The cost of equipment, trucks, taxes, and other indirect costs were not to be included.

There was a considerable range of costs as can be seen in Table 13. Both regions reported a similar range of costs, the Northern Region had the higher average of $39.75 per cord. The average for the Southern Region was $26.06 and for Georgia, $33.10.

A Comparison of Times When Firewood is Cut and Sold

It was noted earlier that most firms operate on a part-time basis and generally in the period from October to February. In the same vein all firms were asked to provide information on how many cords of firewood were cut and prepared each month and how many cords of firewood were sold each month. The data supplied from both regions were quite similar.

As could be expected, the sales of firewood in the period from October to February were higher than the number of cords cut. To permit this drain, it was, of course, necessary that the number of cords cut be greater than the number sold for the period March to September.

The data in Table 14 outlines when wood was cut and when it was sold. It should be noted that the number of cords cut and sold do not represent the total from all firms. Many firms did not maintain records of this nature or chose not to provide this information. The information was provided by 149 firms.

TABLE 14

MONTHLY DISTRIBUTION OF TIMES WHEN FIREWOOD IS CUT AND WHEN IT IS SOLD

GEORGIA

MONTH	CORDS CUT NUMBER	CORDS CUT PERCENT	CORDS SOLD NUMBER	CORDS SOLD PERCENT
JANUARY	1,037	7.9	1,920	15.4
FEBRUARY	947	7.2	1,440	11.4
MARCH	830	6.3	565	4.5
APRIL	753	5.7	182	1.5
MAY	886	6.8	157	1.3
JUNE	872	6.7	163	1.3
JULY	763	5.8	168	1.3
AUGUST	930	7.1	204	1.6
SEPTEMBER	994	7.6	529	4.2
OCTOBER	1,684	12.8	1,686	13.5
NOVEMBER	1,914	14.6	2,743	22.0
DECEMBER	1,496	11.4	2,707	21.7
TOTAL	13,106	100.0	12,464	100.0

Number of Employees in Firewood Firms

It was noted earlier that the typical firm had only one or two employees. It might be anticipated that the number of employees would be closely related to the number of cords of firewood that were sold. This did not prove to be the case. As can be seen in Table 15, 75 percent of the firms had only 1 or 2 employees and only 6 percent had more than 4 employees.

Table 16 provides additional information on the absence of a relationship between the amount of firewood sold and the number of employees. The sales of firms with 1, 2, or 3 employees all varied from less than 25 to 1,000 or more. The data provided from firms in both regions were similar and in each region there was no apparent relationship between number of employees and total sales.

TABLE 15

AVERAGE NUMBER OF EMPLOYEES IN FIREWOOD FIRMS

GEORGIA

NUMBER OF EMPLOYEES	REPORTING FIRMS NUMBER	REPORTING FIRMS PERCENT	NUMBER OF EMPLOYEES	REPORTING FIRMS NUMBER	REPORTING FIRMS PERCENT
1	74	36.3	13	0	0.0
2	78	38.2	14	0	0.0
3	26	12.7	15	0	0.0
4	13	6.4	16	0	0.0
5	5	2.5	17	0	0.0
6	3	1.5	18	0	0.0
7	1	0.5	19	0	0.0
8	1	0.5	20	0	0.0
9	0	0.0	21 TO 25	0	0.0
10	0	0.0	26 TO 30	1	0.5
11	1	0.5			
12	1	0.5			
			TOTAL	204	100.0

TABLE 16

REPORTED NUMBER OF EMPLOYEES IN FIREWOOD FIRMS IN GEORGIA

NUMBER OF FIRMS THAT REPORTED NUMBER OF EMPLOYEES SHOWN

VOLUME OF SALES IN CORDS	NUMBER OF EMPLOYEES															
	1	2	3	4	5	6	7	8	9	10	11-12	13-14	15-17	18-20	21-24	25-30
1 TO 25	17	26	4	2	0	0	0	0	0	0	0	0	0	0	0	0
26 TO 50	23	17	10	3	0	0	1	0	0	0	0	0	0	0	0	0
51 TO 75	8	5	1	0	1	1	0	0	0	0	0	0	0	0	0	0
76 TO 100	8	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0
101 TO 125	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0
126 TO 150	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
151 TO 175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176 TO 200	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
201 TO 250	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
251 TO 300	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
301 TO 350	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
351 TO 400	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
401 TO 450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
451 TO 500	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
501 TO 1000	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
OVER 1000	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0

TABLE 17

CORDS OF FIREWOOD THAT WOULD HAVE TO BE SOLD FOR FIRMS TO REMAIN IN BUSINESS ON YEAR-ROUND BASIS

REQUIRED VOLUME OF SALES	GEORGIA REPORTING FIRMS	
	NUMBER	PERCENT
1 TO 25 CORDS	1	0.9
26 TO 50	3	2.7
51 TO 75	1	0.9
76 TO 100	6	5.5
101 TO 125	4	3.6
126 TO 150	3	2.7
151 TO 175	1	0.9
176 TO 200	12	10.9
201 TO 250	7	6.4
251 TO 300	15	13.6
301 TO 350	3	2.7
351 TO 400	10	9.1
401 TO 450	2	1.8
451 TO 500	10	9.1
501 TO 600	4	3.6
601 TO 700	2	1.8
701 TO 800	1	0.9
801 TO 900	1	0.9
901 TO 1000	8	7.3
1001 TO 1250	2	1.8
1251 TO 1500	1	0.9
1501 TO 1750	0	0.0
1751 TO 2000	2	1.8
2001 TO 2500	1	0.9
2501 TO 3000	0	0.0
OVER 3000	10	9.1
TOTAL	110	100.0

Sales Required to be in Business Full-Time

The firewood industry in Georgia is predominantly a part-time business with operators depending upon another business interest as a primary occupation. If a program to expand the industry and therefore provide a more stable supply of firewood is to be developed, some information is essential on the volume of sales that would be required to encourage an individual to enter the industry on a full-time basis.

Firms that were not operating on a full-time basis throughout the year were asked to provide information on the number of cords they would have to sell to remain in the industry on a full-time basis.

The replies from the 100 firms that responded were similar from both regions but the required volume of sales varied widely. Table 17 presents the number of firms and the annual sales volume they would need to remain in business full-time.

One area in which the two regions reported different data was in the average sales per firm that would be required. In the Northern Region the average per firm of required sales was 1,334 cords per year. In the Southern Region, the average was only 578 cords per year. The average for Georgia was 945 cords.

TABLE 18

LENGTH OF DRYING TIME FOR FIREWOOD BEFORE SALE

NUMBER OF MONTHS DRYING TIME	REPORTING FIRMS					
	GEORGIA		NORTHERN REGION		SOUTHERN REGION	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
0	76	36.0	29	26.4	47	46.5
1	28	13.3	14	12.7	14	13.9
2	29	13.7	15	13.6	14	13.9
3	26	12.3	17	15.5	9	8.9
4	14	6.6	11	10.0	3	3.0
5	2	0.9	1	0.9	1	1.0
6	26	12.3	20	18.2	6	5.9
7	1	0.5	1	0.9	0	0.0
8	5	2.4	0	0.0	5	5.0
9	3	1.4	1	0.9	2	2.0
10	1	0.5	1	0.9	0	0.0
TOTAL	211	100.0	110	100.0	101	100.0

New Employees Required to Meet Annual Sales Volume Necessary to Stay in Business Full-Time

If firms could be encouraged to stay in business full-time and achieve the required sales volume noted above, it should be anticipated that significant new employment opportunities would be created. In addition to the required sales volume, firms were asked to estimate the number of employees they would require to meet the new sales volume.

Despite the increase from the present average sales in Georgia of 110 cords to the required average annual sales of 945 cords, the increase in the number of employees was very small. For Georgia the increase in number of employees was an average of 1.17 employee per firm. There was a difference between the Northern and Southern regions in the average number of new employees required. In the Northern Region the average was 1.5 new employees per firm while in the Southern Region the average was only .85 employees.

Drying Period for Firewood

There was a discernible difference between the two regions in the length of time that firewood was permitted to dry before sale. As can be seen in Table 18, firewood was given a generally longer drying period in the Northern Region.

It can also be observed that 35 percent of the firms did not allow any time for the wood to dry. It should be noted, however, that this was not necessarily an attempt to sell an inferior product. Frequently respondents explained that the procedure of the firm was to cut wood on an "as ordered" basis only, thus eliminating a storage cost and drying time.

The average drying time in the Northern Region was 2.64 months while in the Southern Region it was 1.78 months.

Equipment Requirements

Participation as a firm in the firewood industry requires a substantial capital investment in equipment even at very low levels of annual sales. Even at minimum sales levels there is generally a requirement for a chain saw and a truck. As sales increase, there is a point where additional units such as splitters and loaders become a necessity.

In this study equipment investment was compared for two groups. One group had sales of 200 cords or less while the second group reported sales of over 200 cords.

As can be seen in Table 19, the equipment investment for a firm with sales of over 200 cords was 14 times as great as for a firm with sales of 200 cords or less.

The equipment investment for the two regions was very similar as to the items of equipment, but firms in the Northern Region reported somewhat higher costs for equipment. The average investment for firms selling 200 cords or less was $8,040 for the Northern Region and $5,082 for the Southern Region.

A woodyard owner operates an automatic splitter, one of the great labor saving machines that has been invented in recent years to make volume production possible.

TABLE 19

EQUIPMENT INVESTMENT OF FIREWOOD FIRMS IN GEORGIA

TOTAL ANNUAL SALES OF FIRMS

	200 CORDS OR LESS			OVER 200 CORDS		
TYPE OF EQUIPMENT	NUMBER OF FIRMS WITH EQUIPMENT	TOTAL PIECES OF EQUIPMENT	AVERAGE COST OF EQUIPMENT	NUMBER OF FIRMS WITH EQUIPMENT	TOTAL PIECES OF EQUIPMENT	AVERAGE COST OF EQUIPMENT
CHAIN SAWS	119	205	$ 336	9	19	$ 329
TRUCKS	107	130	3,535	11	25	6,856
TRACTORS	11	11	4,277	0	0	0
SKIDDER AND GRAPPLE	1	1	2,500	3	6	47,000
TRAILERS	6	10	3,110	0	0	0
DUMP TRUCKS	6	8	4,875	0	0	0
SPLITTERS	36	37	1,926	7	7	23,443
BANDING MACHINES	0	0	0	2	2	52,500
BOOM LOADERS	7	7	9,714	4	6	32,333

	200 CORDS OR LESS	OVER 200 CORDS	FOR ALL FIRMS
TOTAL NUMBER OF FIRMS IN GROUP	120	10	130
TOTAL EQUIPMENT INVESTMENT FOR GROUP	$787,318	$922,750	$1,710,068
AVERAGE INVESTMENT PER FIRM IN GROUP	6,561	92,275	13,154
AVERAGE CORDS SOLD PER GROUP	49	891	110
MEDIAN CORDS SOLD PER GROUP	40	668	40

Program to Improve Industry

Firewood dealers were asked to give their opinions on factors that might be included in a government program to promote the use of firewood and assist the firms in the firewood industry.

Two factors were by far the most frequently cited. First, there should be a low interest loan program that would permit dealers to purchase sufficient equipment to operate on a larger scale. Next, action should be taken to insure a ready supply of wood. This could be done by making wood available from federal or state forests or by locating and encouraging private landowners to sell wood to firewood dealers.

It should also be noted that a significant number of dealers were of the opinion that government should not become involved in the firewood business.

The following recommendations were also noted:

a. Educate the public on the use of firewood as an energy source.
b. Provide income tax credit for purchase of firewood stoves and firewood.
c. Government purchase firewood and distribute to needy.
d. Encourage industrial use of firewood by an education program and by special tax incentives.
e. Provide training for firewood dealers on new equipment and business methods.
f. Help provide labor through a "CETA" type program.
g. Require dealers to be licensed.
h. Promote an association of firewood dealers.
i. Provide local reports on available sources of wood.
j. Reduce income tax on income from selling firewood.
k. Provide cost-sharing for private landowners who will plant and manage wood-lots for firewood use.
l. Provide tax incentives for firewood firms that create "new" job openings for unskilled unemployed labor.
m. Prohibit the burning of wood waste when land is cleared.
n. Establish "Wood Markets" similar to "Farmers' Markets."

Industry Trends

The apparent growth in the use of firewood for household heating has set the stage for a change in the scope of operations for firms in the industry. The typical chain saw and pick-up truck level of operation will continue to serve most local areas throughout Georgia but there is evidence that large consumer markets will be served by a new type of firm.

The increasing demand for firewood has attracted technology to the problem of supplying large quantities of firewood through more efficient and less costly operations. Machines have now reached the market that introduce a considerable level of automation to the cutting, splitting and loading of firewood. Where automation is not possible, the task of moving large logs and preparing them for cutting and splitting has been made easier by heavy special duty equipment.

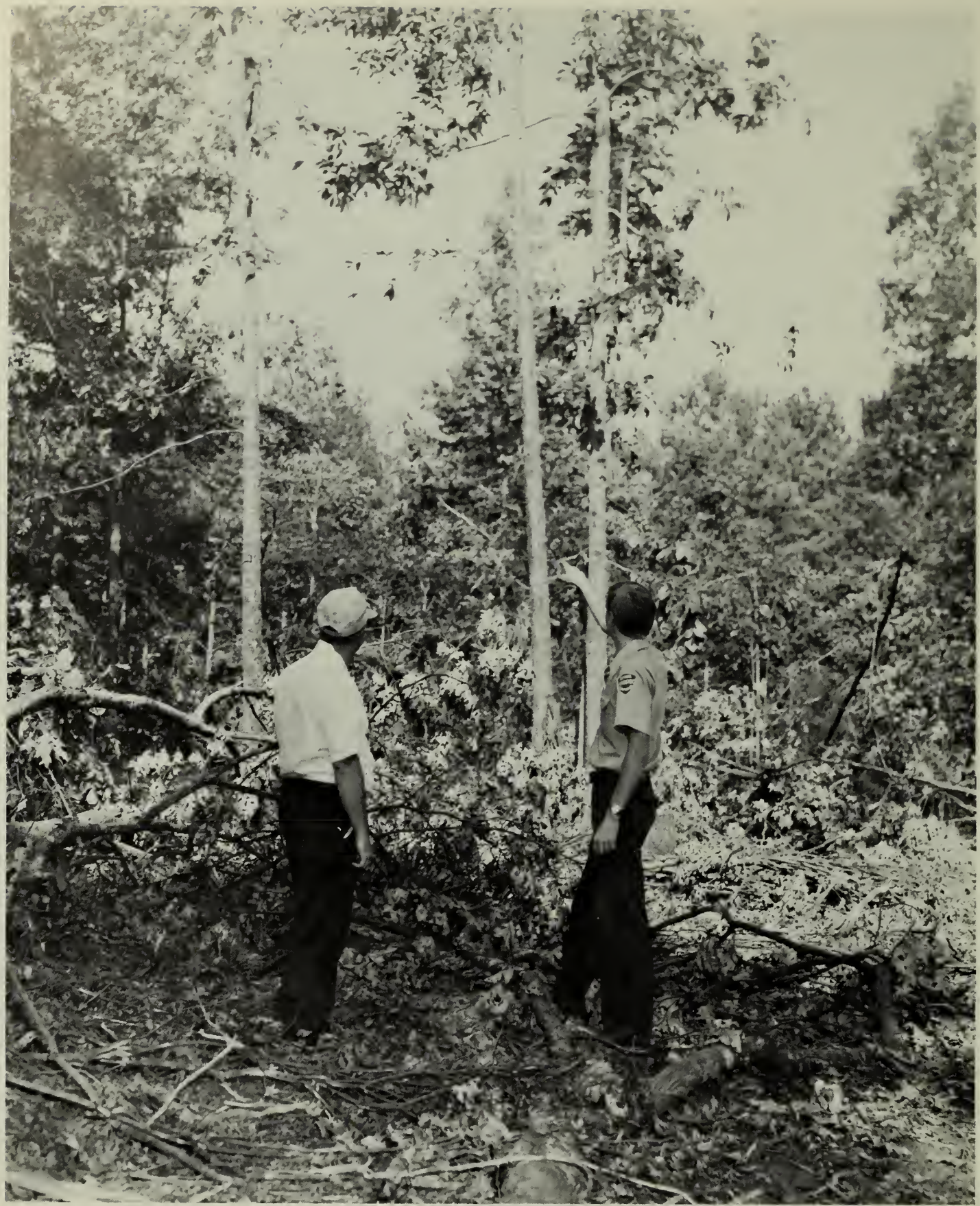
It is now possible to replace the firm that cuts and sells perhaps one cord of wood a day with a new organization that can produce 20 cords of split firewood in an 8 hour day. The one-half cord pick-up truck can be replaced by trucks that easily handle 10 cords.

Three such firewood firms were started in North Georgia in 1980. These firms have invested in new equipment that can be operated by from 1 to 3 men and can produce 20-22 cords of firewood in an 8 hour day. In such an operation, one crew of four men cuts trees, loads them on trailers, and carries the logs to the wood yard. A yard crew then cuts the logs into lengths that can be accommodated by the saw and splitting machine. These lengths can vary from 8 to 40 feet. The machine crew of 1 to 3 men cuts and splits the firewood which then goes by conveyor belt either into a waiting truck or to a wood pile where it is subsequently loaded by use of lift trucks.

Other features of the machinery include the ability to band bundles of wood, wrap them in plastic, or fasten them to large pallets.

It is likely that the cost efficiency of such firms will permit them to transport firewood in large quantities for distances that have, until now, been prohibitive. Firms will be able to be located near the source of wood and still serve large consumer areas such as Atlanta.

These large volume firms will have the option of producing the firewood and selling it through their own retail outlets, or they can concentrate on selling it at wholesale to firms that will sell it at retail.



A landowner and a forester survey a stand to determine trees that should be cut for fuelwood purposes. Georgia has an abundance of hardwood acreage such as this that could be harvested for firewood.

A. Ray Shirley, Director
John W. Mixon, Chief of Forest Research

Cost $2,507
Quantity 5,000