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THE POLE MARKET IN HAITI:

SOUTHWEST TO PORT-AU-PRINCE

by

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The views expressed herein are those of the  
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## EXECUTIVE SUMMARY

The purpose of this work was to analyze the pole market in Port-au-Prince. The study entailed taking samples of 25 randomly chosen poles at seven depots in the metropolitan area and tracing their movement from their origin.

The poles are sold as a "melange" or mixed species in the different depots. Since poles are used mainly in the construction business as supports for concrete forms, prices are based on their large-end diameters. This diameter averages 2.6 inches for all the depots. The data are symmetrically distributed around the means, but they are significantly different among the depots. The range between two and 3.1 inches represents 71 percent of all the large-end diameters found in the depots.

In agreement with a previous study, the majority of the poles was found to come from the Southwest region. The poles are sold by the peasants for twelve gourdes per dozen at the farm level. They are transported from the southwestern harbors by sailboats. The unreliability of the ships is the major impediment to an efficient marketing system for poles.

Poles in Port-au-Prince are sold for about 40 gourdes per dozen. At the moment of this study, Haiti was facing a crisis in the supply of cement. This crisis slowed down the construction activity causing a fall in the prices of poles in Port-au-Prince. As a consequence, the poles were selling for more or less 25 gourdes per dozen in Port-au-Prince, and for seven gourdes per dozen at the farm level.

Given the normal rate of construction in the metropolitan area, poles can be considered as a means to increase the income of tree planters. The following recommendations are made for the pole market:

1. The Southwest area should be provided with trees able to coppice under the crop-harvest burn cycle prevalent in the region along with appropriate extension support.
2. Peasants should be provided market information on prices and product requirements in Port-au-Prince.
3. A study should be made to determine the feasibility of alternative boat transportation to supplant undependable sailboats.
4. Studies should be expanded to other potential pole-supply areas in an effort to provide an increased income alternative to farmers.

## RESUME

Bi travay sa li té analizé maché poto nan PotoPrins. Pou étid sa té kab fet, 25 poto té chwazi nimpot ki jen nan 7 depo PotoPrins, é aprè fason poto kon rivé soti la kay yo pou alé nan dépo té etidyè.

Gen plizyè kalité bwa nan depo, kalité sa yo rélel mélangé. Poto sa yo, yo plis itilizé pou fe apui nan konstriksyon kay. Sé pou sa ké pri poto basé sou grosé diamèt ki pi gwo-a. Gwo diamèt sa genyen yon moyenn de 2.6 pous pou tout depo. Doné yo té distribwé mem jen sou chak bo moyenn. Doné chak dépo té statistikman diféren yon ak lot. Eca ki genyen ent 2 e 3.1 pous représenté 71% de tout gwo diamèt poto-yo.

Kom sa té dékri nan étid anvan, Sud-Ouest bay majorité poto ki ap vann nan depo PotoPrins. Abitan vann poto sa yo 12 goud pa douzenn nan zon pa yo. Transpo poto fèt pa yon seri bato (vwalye) depi waf Sud-Ouest.

Bagay kap genin komès poto se afè bato vwalyé, paské pèsan pa konin kilè yon vwalyé ap soti an provins e kilè yap rentré PotoPrins.

Poto sa yo nan PotoPrins ap vann en moyenn 40 goud pa douzenn. Epok étud sa tap fèt, Haiti tap travèsé yon kriz ciman. Kriz sa té la koz zafé konstiksyon té ralenti. Kom konsekans enco sa pémèt poto-a vinn vann 25 goud pa douzenn nan maché PotoPrins e 7 gouds pa douzenn nan min abitan.

Si nap konsideré ki jan konstriksyon kay ap ogmenté nan PotoPrins, komès poto ap kapab pémèt abitan ki ap planté pyebwa



vinn jouen plis kob. Daprè étid sa, men rekomandasyon ki fet pou maché poto:

1. Zon Sud-Ouest la ta dwé jouen pyebwa ki kapab repousé aprè abitan fin meté difé pou yo kapab fè jaden, materiel-sa ta dwé rive jouen yo avek supor moun kab fet extension.
2. Abitan ta dwé konin ki pri é ki longué yap pratiké nan PotoPrins.
3. Yon pi bon mwayen transpo pasé vwalyé ta dwé envisagé.
4. Lot etid ta dwé fet pou lot rejyon, pou wè si plantè pyebwa yo kapab jouen plis kob si yap entré nan komès poto.

THE POLE MARKET IN HAITI:  
SOUTHWEST TO PORT-AU-PRINCE

by

Donald R. Street and Philippe Bellerive\*

I. Introduction

The Agricultural Outreach Project (AOP) was established with the goal of improving the incomes of Haitian farmers through tree-planting operations allied with amenable cropping systems. The Republic has massive erosion problems caused by the deforestation of the mountains which account for three-fourths of its territory (Anglade, 1975). The deforestation has played two roles in the socioeconomic fabric of the country. The supply of wood products for family needs and to the public for income purposes has led to forest depletion, and hence erosion due to lack of tree coverage and its corresponding ground cover. Additionally, the farmers often plant the steep hillsides to tillable crops which leads to further erosion.

Poles represent one of the principal uses of the fast-growing hardwoods promoted by the Pan American Development Foundation and CARE in the tree-planting program in the country, at least in the shorter time period. Charcoal and firewood are the other two major uses of wood in the short time period of two to five or six years of growth. Poles are used extensively in the construction business

\*Resource Economist and Economic Associate, respectively.

all over the country, as well as in many farm enterprises related to animal pens and fencing. According to Grosenick and McGowan (1986), Port-au-Prince was consuming 438,000 poles annually in 1986. A better understanding of the pole market in terms of income potential and its related problems of environmental impacts will improve extension methods to aid the farmers. The present study focuses on the pole market from the Southwest to Port-au-Prince.

### Purpose

The purposes of this study were as follows:

1. To determine unit prices of poles at different market places and by functional activities;
2. To describe the shipping modes and market margins;
3. To appraise the efficiency of the market; and
4. To determine problem areas, implications and alternatives for improvement.

### Methodology

The pole market was described by tracing the product movement and price variations of suppliers from the farm level in the vicinity of the harbors of Jeremie and Corail in the Southwest to the retail points of Cite Soleil, Carrefour, and Cazeau in the Port-au-Prince area. The study entailed a description of the poles including measurement of the large-end diameter, the small-end diameter, the length, the price of the product, and other relevant information at seven depots in Port-au-Prince. Data on the size measures included minimum and maximum values, medians, means and standard deviations for random samples of 25 poles from each depot.

### Limitations of the study

It is difficult to establish a completely reliable statistical sample at the farm level among peasants, in part because of inaccessibility of the farms due to poor roads and because of the peasants' reluctance to provide information directly to an outside interviewer. The government attempts to implement and enforce laws relating to cutting of trees. Farmers violating laws are subject to having illegal wood products seized. Farmers are skeptical of anyone asking questions, especially if the interviewer might be a government agent.

Prices used in the study tend to be modal values falling in a range of minima and maxima. Some bargaining is usually involved in consummating a deal. The poles are often used at the building site by a "bos," a carpenter or mason with low technical expertise, and he may not be inclined to communicate with outsiders on prices and conditions of trade.

### Background

The Haitian pole market can be described by the competitive structure in which it exists. Certain previous work is also relevant to the present work.

Theoretical. The Haitian pole market can be described to a certain extent by the type of market structure in which it falls. A competitive market structure is the standard against which efficiency criteria are applied. Such structures never exist in real life, but are useful in making judgements for improvements in the economy. A competitive market entails many buyers and sellers dealing with a homogeneous product. No seller or buyer is of a

significant size to influence the price of the product. There is ease of entry and exit in the market, and adequate information is available on pricing of the product and on alternative uses of resources of the owners. When all the conditions of competition are met, the forces of supply and demand will establish prices, and there is no room for bargaining, since no person in the market can influence price, Figure 1. If the supply decreases, such as from S1 to S2 in Figure 2, the price will be expected to increase. Similarly, if demand increases, other things equal, price will increase. Prices will change in the opposite directions with reverse changes in the two independent variables. Other variables which may affect demand and eventually price are the incomes of the buyers, the prices of substitute products and complementary products, as well as expectations of changes in prices, incomes, or other variables.

If monopoly power exists in the market, allowing one party to influence price, there will be inefficiencies in the system allowing a misallocation of resources. Some of the deviations from a competitive market will be indicated for the present study.

Previous Work. In his 1986 study, McGowan reached the following conclusions on the attitudes of the southern farmers who produced poles in the region of Les Cayes/Laborde:

a. The harvesting of poles requires much less work and offers a higher return than charcoal, but farmers are not willing to wait for pole maturity, and the demand for poles is considered by farmers to be low and erratic.

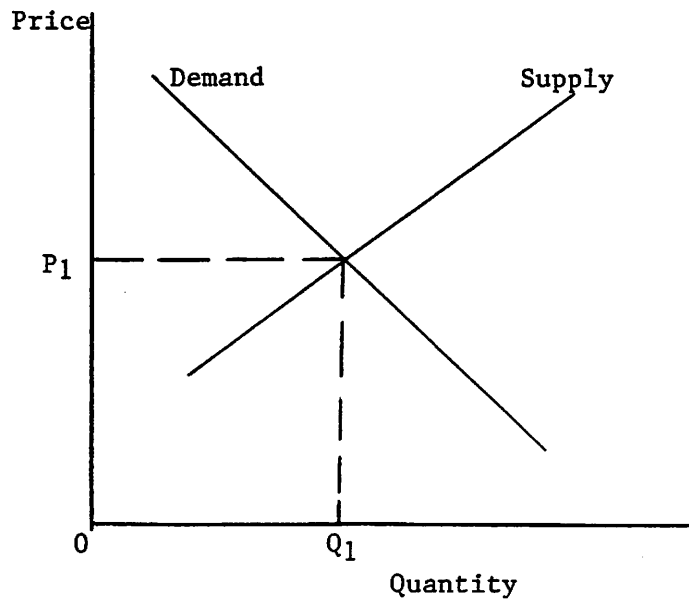


Figure 1. Establishment of Price by Supply and Demand in a Competitive Market.

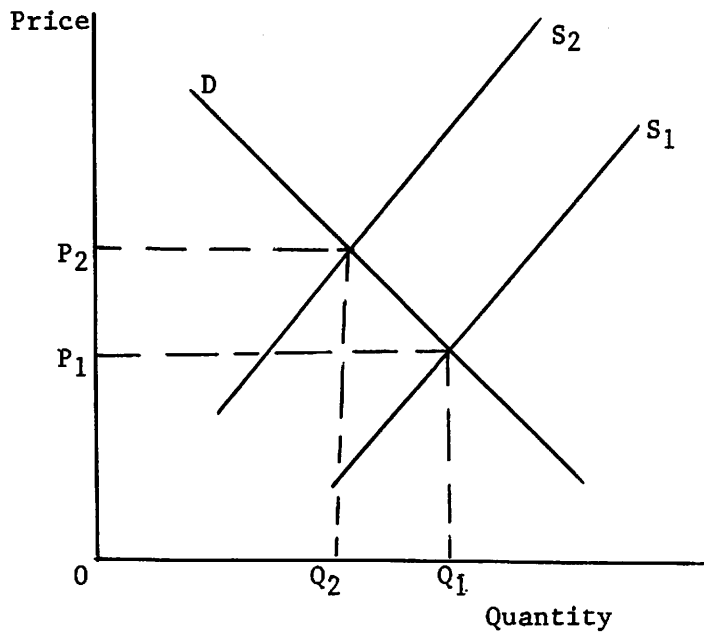


Figure 2. Supply Decrease and Corresponding Price Increase in a Competitive Market.

b. Poles are cut more for auto-consumption purposes than for the market; the auto-consumption process allows the Haitian farmers to save between \$120 and \$350 in construction materials when building a house.

c. The mixed species, "melange," followed by bwa coma, Sideroxylon foetidissimum, and lorye, Ocotea leucoxylon, were the dominant varieties used for poles.

McGowan's study related to remote areas and that preference pattern might not be expected to be followed in urban areas. Grosenick and McGowan (1986), in their survey of wood products coming to Port-au-Prince, attributed 90 percent of the origin of the poles to the Southwest.

## II. Results

Product Characteristics. Some variations of product quality in the pole market represent departures from the competitive model. The dimensions of poles vary somewhat from depot to depot and there is considerable variation within any depot, Tables 1 and 2. In general, the statistical measures were highly symmetrical for the three variables within any individual seller's sample. This lack of skewness in the sample distributions is illustrated by the closeness of the mean and median for the data.

There was a significant difference in the means among the large-end diameters of the seven sellers ( $p < .05$ ), Table 2. The small-end diameter and the length were also significantly different ( $p < .05$ ) for the seven sellers, Table 2.

Table 1. Statistics on Pole Sample Dimensions for Seven Sellers in Port-au-Prince, 1989\*

Sellers	Statistics**			
	Min.-Max.	Median	Mean	St.Deviation
1.				
Large end	3.1-4.4	3.7	3.7	0.3
Small end	1.8-3.2	2.3	2.4	0.4
Length	9.6-13.0	11.7	11.7	0.8
2.				
Large end	1.9-3.7	2.3	2.4	0.4
Small end	1.2-2.7	1.6	1.6	0.3
Length	8.8-11.6	9.8	10.0	0.7
3.				
Large end	1.8-2.7	2.2	2.2	0.2
Small end	1.1-1.8	1.4	1.4	0.2
Length	8.7-11.0	9.2	9.5	0.6
4.				
Large end	1.7-3.2	2.4	2.4	0.4
Small end	1.2-2.1	1.6	1.6	0.3
Length	8.2-12.6	10.2	10.3	1.0
5.				
Large end	2.0-3.4	2.5	2.5	0.3
Small end	1.0-2.1	1.6	1.6	0.2
Length	8.0-11.8	10.1	10.0	0.8
6.				
Large end	1.4-2.9	2.1	2.2	0.4
Small end	1.2-1.8	1.5	1.5	0.2
Length	8.7-12.9	9.8	10.0	0.9
7.				
Large end	1.7-4.0	2.4	2.7	0.6
Small end	1.2-2.8	1.6	1.7	0.5
Length	9.0-13.5	10.3	10.7	1.1

\* Twenty-five poles were in the sample at each seller depot.

\*\* Large- and small-end diameters are expressed in inches and the length is expressed in feet.



Table 2. Overall Statistics on Pole Sample Dimensions for  
Seven Sellers in Port-au-Prince, 1989.

Dimensions	Statistics*			
	Min.-Max.	Median	Mean	St.Deviation
Large end	1.4-4.4	2.4	2.6	0.6
Small end	1.0-3.2	1.6	1.7	0.4
Length	8.0-13.5	10.2	10.3	1.1

\* Large- and small-end diameters are expressed in inches and the length is expressed in feet. N=175.

The main use of the poles is for building supports (bwa cofrage) in houses. The range of sampled poles extended from 8.2 feet to 13.5 feet in length. The modal use length was toward the lower value of the range, but the longer poles can always be cut to fit the job. Any trimming to fit will yield a by-product wood which is likely to be used for fuel or other uses.

A high correlation is probable between base diameter of a tree and the maximum length of pole possible from the tree, but the arbitrary cutting of poles to a particular length will reduce the pole-length-to-diameter correlation. This fact is supported by a least-squares analysis showing only a moderate positive correlation between the two variables. A quadratic model was preferable to express the relationship of the two, because of a lack of autocorrelation as indicated by the Durbin-Watson value, but it only showed a correlation coefficient ( $r$ ) of +0.48 and a coefficient of determination ( $r^2$ ) of .23, Table 4. The model indicates that a pole should be at least 8.2 feet long to be acceptable in the market at Port-au-Prince as indicated below.

The customers put emphasis on the large-end diameter for meeting job requirements and for bargaining on price. The overall large-end mean diameter was 2.6 inches for the entire group. Table 3 indicates that 54 percent of the poles had a large-end diameter between 2.0 and 2.5 inches and the figure increases to 71 percent if 2.0 and 3.1 inch limits are used. The small-end diameter had a larger mean for some depots than the large-end diameter for other sellers, Tables 1, 2, and 3.

Table 3. Frequencies of Large-End Diameters for Samples of 25 Randomly Chosen Poles in Seven Port-au-Prince Markets, 1989.

Ranges*	Frequencies	Percentage
1.4-1.9	16	9
2.0-2.5	94	54
2.6-3.1	30	17
3.2-3.7	22	12
3.8-4.3	12	7
4.4-4.9	1	0.6

\* Expressed in inches.

Table 4. Results of Regression Analysis for Large-End Diameters of Poles as a Function of the Lengths of Poles.\*

Models	Simple Linear	Quadratic	Semi Log.	Double Log.
Values				
Correlation Coef.	0.479	0.478	0.450	0.450
Coef. of Determination	0.229	0.231	0.207	0.203
St. Error of estimate	0.563	0.563	0.209	0.211
Chi-Square	11.26	15.76	5.64	3.96
Durbin-Watson	1.04	2.02	2.07	2.06

\* The regressions were performed according to the Ordinary Least Squares method.

The species are mixed and unspecified in the different pole batches. While strength varies somewhat among the species, there is little need to differentiate for meeting most requirements. They are nearly homogeneous products for meeting the bulk of the use needs. The "bos" essentially takes what is offered since the depletion of local supplies limits his selection.

Some of the species variation is shown by the following trees identified at the different depots:

Creole name	Scientific name
Campeche	<u>Haematoxylum campechuanum</u>
Coma	<u>Sideroxylon foetidissimum</u>
Bois rouge	<u>Guarea trichilioides</u>
Delin	<u>Leucaena sp.</u>
Bois mangle	<u>Rhizophora mangle</u>
Lorye	<u>Ocotea leucoxyton</u>
Bayawonn	<u>Prosopis juliflora</u>

All of these trees are considered to be native endangered species to Haiti (Unda, 1989). Exotic species tested and introduced by CARE and the Pan American Development Foundation had not appeared in sufficient numbers in the Grande Anse region of the Southwest to enter in customer appraisals.

Pole Movement to Market. There are two major methods by which poles move from the Southwest to Port-au-Prince. First, a customer who needs some poles makes an appointment with peasants in the Southwest, indicating the amount required. The delivery date is agreed on and the buyer either transports the poles by truck or has them sent to Port-au-Prince by boat. Since all such deals are

different, it was not possible to determine the definitive price and other details of the transactions. The second method uses a number of transactions changing prices as follows:

Price Change by Market level	Price (gourdes/dozen)
a. Poles at producer level	12
b. Taxes	1.20
c. Transportation by boat from Southwest to P-a-P harbour	5
Intermediary (optional)	5
d. Coralin transfer	1
e. Price paid by the retailer at P-a-P wharf	25-30
f. Transportation from P-a-P per "cabroua" to retail market	1
or by truck	3.75
g. Retail price	40-45
Marketing margin	28-33

The fluctuations in price are due to two factors. First, changes in supply and demand will result in variations in the price. Second, prices vary according to the size by the minima and maxima indicated in the previous portrayal. At the time of the study Haiti was facing a crisis in the supply of cement which itself slows the construction activity. Due to the complementarity of concrete and poles in building, this random shock caused the price of poles to drop so much that the southwestern (Dame Marie,

Pestel, Corail) peasants decided to halt their production and limit themselves to the selling of their harvested inventories. Figures 3 and 4 illustrate the related markets of the two building factors and their consequences on the farmers' incomes in revenue. Farmers have considerable flexibility in their tree marketing for poles, since the wood has other uses and can be retained in a standing inventory.

The Producer. According to the PADF Animator, Gaspard Brice, in the South Region in the Grande Anse area, trees for poles alternate with food crops. After the trees are cut, the farmer sets fire to his land. The fire process is a pest-control measure which the farmer considers imperative if food crop production is to take place afterwards. During the next three or four years while the food crops grow, the coppicing takes place with trees. This cycle has allowed the Grande Anse area to manage its vegetative cover. Any increase in demand for wood products could disrupt the equilibrium established by this management. It has been observed that during the construction of roads in the Southwest, the workers coming from the cities made the local peasants aware of the economic potential of charcoal and poles. This awareness causes an increase in the rate of tree cutting (Brice, 1989). One of the problems faced by PADF in this area is to supply trees which can coppice after a fire. The farmers are reluctant to adopt any tree species which is not known to meet this requirement (Brice, 1989).

The average farm-level wholesale price for a pole to be shipped out is one gourde. The retail price for a pole which is

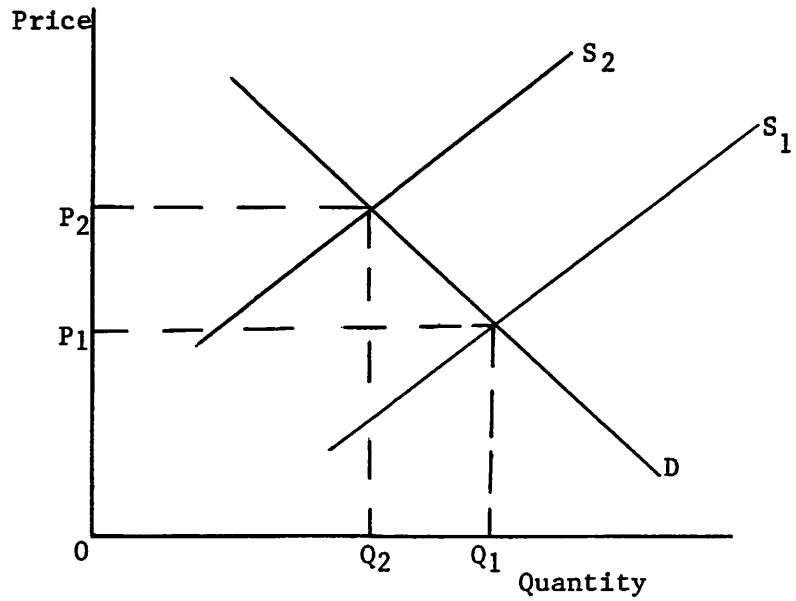


Figure 3. Supply Decrease in Cement Causing its Price to Increase.

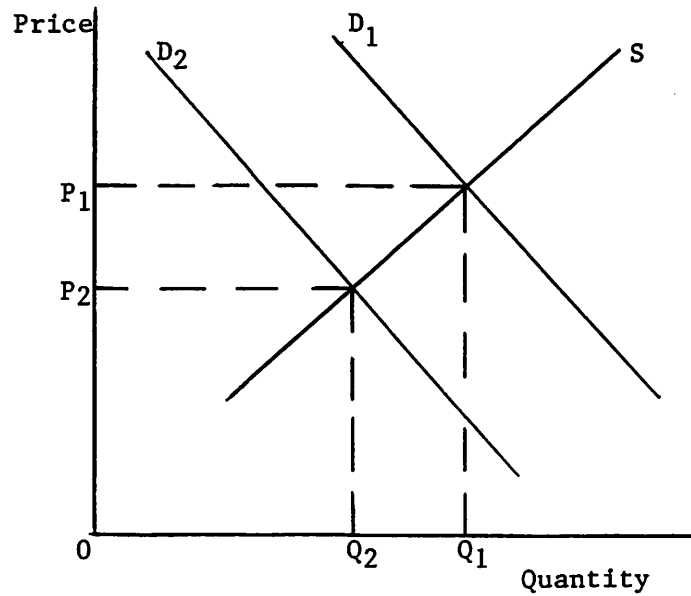


Figure 4. Demand Decrease For Poles Caused by Price Increase in Complementary Cement.



used by a local peasant or resident is likely to be higher. Poles are used locally as construction material in the rural community. The cement situation discussed above has caused a temporary decrease in the pole price from one gourde to one-half gourde. Generally, it is the farmer who brings the poles to the Jeremie or Corail wharfs. The physical features of the coast are amenable to smuggling by boat at non-legal harbors, thereby cutting down on transportation costs and allowing the evasion of taxes on the product.

The present study results agree with the conclusion of the 1986 McGowan work. The farmer produces poles primarily for his personal consumption.

Transportation to Port-au-Prince. Upon arrival at the wharfs, the pole cargo of the peasants is handled either by the captain of the boat or an intermediary who travels with the ship. The intermediary can immediately buy the poles from the peasant, or pay the peasant after he has sold the merchandise in Port-au-Prince, retaining a commission of five gourdes per dozen.

The intermediary must pay a tax of 1.20 gourdes per dozen poles before they can be legally transported. In practice, however, there seems to be a tax of only 1 gourde per dozen, a slight reduction from the official rate of tax. The receipt for the tax must be retained on the boat when it arrives at the capital wharfs or the whole cargo can be confiscated.

The transportation of poles to Port-au-Prince is usually by boats, except when an individual assumes his own transportation of them. The craft are all sailboats and many are of questionable

seaworthiness. It is not rare for a boat to be delayed for a week because of the dependency on favorable tides and winds for sailing. If the conditions are perfect, it will take two days to reach the Port-au-Prince wharfs. During delays, the proximity of the sea can contribute to the rotting of poles, causing a major loss for the owners.

The sailors charge a modest five gourdes per dozen for the transportation, and in a harbor like Corail where activity is low it can be bargained downward. The rate has not changed in three years and is the same as found by Grosenick and McGowan in their 1986 study. This fact may be an indication that the traffic has stayed more or less constant.

Transportation to Retail Markets. The boats unload their cargo either at Cite Soleil or Port-au-Prince wharfs, often by the aid of canoes known as "coralin" which transport the boat's cargo to the wharf. The price for this service fluctuates between one-half gourde and two gourdes per dozen.

Retailers buy poles at the wharf at 25 to 30 gourdes per dozen according to their size. They are transported on carts called "cabroua" which are towed by a man. The price of transportation by cabroua to the cite Soleil, National Highway 1 and La Saline markets is from one-half to one gourde per dozen. When trucks are used to haul the poles to Carrefour, the rate is from three to four gourdes per dozen.

The Retail Price. Most of the trading points for poles are located either in close proximity to the Port-au-Prince wharf in the la Saline market, near the Cite Soleil wharf and at National

Highway 1. Only one selling point was found in Carrefour. The geographic nearness prevents drastic price differences between sellers. There seemed to be little reason for serious shopping among the different markets, since transportation prices could account for most of the differences.

The retail prices are concentrated around 40 gourdes per dozen, showing that 70 percent of the consumer cost is due to marketing margins. This margin covers the cost of functions between the price a buyer pays for the good and the price at which he sells it. In the situation of the cement shortage, farm prices and retail prices had decreased, while other costs stayed about the same. The retailer, consequently, has faced a decrease in his margin from 15 gourdes per dozen to five gourdes per dozen. Some retailers claimed that they made no profit on the transactions since they had to sell at cost to maintain cash flows.

The Marketing System. Peasants consider pole production a marginal activity because of the unreliability of the income it generates in view of other alternatives. This problem is due partly to the nature of the pole demand and partly to the irregular supply of the product which can cause overstocking.

The great majority of the poles is carried by unreliable sailboats. A round trip takes more or less one week. The trucks for hire traveling between the Southwest (Jeremie, Corail, Pestel) and Port-au-Prince never carry poles. They usually carry charcoal sacks and passengers because of more favorable returns. The poor conditions of the roads in the Southwest have essentially ruled out trucking as an alternate transportation system. As in the

charcoal study of the Northwest (Street, 1989), the transportation system is one of the largest impediments to efficiency in the pole market. This transportation problem affects both the supply and the price of poles. If the products cannot reach the intended market, they will not generate income. A motor-powered boat could provide some stability in the supply of the poles and save time of buyers and sellers. This option should be studied in the future.

There is a need for better knowledge of the Port-au-Prince market by the peasants. Farmers have made errors of harvesting trees at low price levels because of the lag time in learning that the price of poles in Port-au-Prince had dropped.

A better marketing system would make poles a more attractive crop for the Haitian peasant which could allow poles to compete with charcoal as an income alternative. Given the rate at which construction is growing, it seems logical to assume that demand for poles is going to increase.

### III. Summary and Recommendations

#### Summary

Poles are one part of the products of trees that move from the Southwest to Port-au-Prince. Poles are important because of their use on the farm, the income they generate and their effect on the environment of the country. The present study attempts to describe the products sold, to determine the prices at different marketing levels, to study the marketing system and to propose solutions to existing problems.

A sample of 25 randomly chosen poles was taken at seven different depots in Port-au-Prince. The poles were measured for

large-end diameter, small-end diameter, and length at the different depots. Base-line statistics were computed to serve as guidelines for future comparisons. Two shipping methods were described, and the principal one, boat transport, was analyzed.

The following conclusions can be drawn from this study:

1. The diameter of the large end of a pole is the measure that is of most importance to the buyer.
2. The average large-end diameter of poles is 2.6 inches.
3. There were large variations in the dimensions of the poles but they seemed to have a symmetrical distribution.
4. A "melange" or mixed-species pole combination is the norm at the different depots.
5. Poles are normally used in house building by peasants and for concrete support in other building.
6. Prices of poles are closely correlated with the construction business activity.
7. At the time of the study the shortage of cement had caused a decrease in the price of poles from 12 gourdes to six gourdes per dozen at the farm level, and from 40 gourdes to 25 gourdes per dozen at the retail market in Port-au-Prince.
8. Prices are based mainly on the diameter of the large end of the pole.
9. Marketing margins represent 70 percent of the price.

10. The principal impediment in the marketing system is the inefficient sailboat transportation from the Southwest wharfs to Port-au-Prince.
11. The pole activity does not conflict with any other farm tasks carried on by the farmers.
12. The major problem preventing an increase in pole production seems to be price instability.
13. The rapid growth of urban housing should maintain the demand for poles in the long run.
14. The Grande Anse region (Jeremie), with one of the last native Haitian forests, supplies the majority of the poles to the Port-au-Prince market.

#### Recommendations

The following recommendations can be made on the basis of the study in the Southwest pole supply area.

1. The area should be provided with trees able to coppice under the crop-harvest burn cycle prevalent in the region along with appropriate extension support.
2. Peasants should be provided market information on prices and product requirements in Port-au-Prince.
3. A study should be made to determine the feasibility of alternative boat transportation to supplant undependable sailboats.
4. Studies should be expanded to other potential pole-supply areas in an effort to provide an increased income alternative to farmers.

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