

MARKETING OF *CHRYSOPHYLLUM ALBIDUM* (LINN) FRUITS WITHIN THE PRODUCE MARKET IN UYO, AKWA IBOM STATE OF NIGERIA

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ABSTRACT

This study was to provide baseline information on the marketing of African star apple fruits in Uyo, Nigeria to help improve on the marketing activities. 100 randomly selected star apple fruit traders were interviewed using structured questionnaires to provide information on certain variables, for assessing the market structure, conduct and performance, and identifying the problems. Results revealed that women (76.8%) and people with primary education (47.5%) dominated the trade. Localized fruit traders' unions limited prospective entrants into the trade. The trade had complex marketing channels and traders were generally in business for only about three months annually when the fruits were in season. Horizontal integration was practiced. Major problems affecting the trade included poor storage methods, inadequate capital base and poor transportation network. Vertical integration of fruit sales and processing of some of the fruits into fruit juice, jam and jelly is recommended to reduce fruit spoilage due to poor storage. More studies are necessary to find better harvesting and storage methods, while the traders should be empowered through soft loans, and encouraged to form co-operative groups to improve on their capital base.

KEYWORDS: Marketing, *Chrysophyllum albidum*, Fruits, Uyo, Nigeria

INTRODUCTION

Chrysophyllum albidum Linn is a rainforest tree species commonly found in dwelling compounds, abandoned compounds and farmlands in southern Nigeria. It is usually cultivated for its edible fruits, the African star apple fruits. The fruits are large oval shaped berries, green in colour when unripe, but orange in colour when completely ripe. They are non-timber forest produce (NTFP) of nutritional, social, medicinal, economic and traditional importance. They contain 8.8% protein, 17.1% oil, 20.9% sugar, 11% starch and other minerals of nutritional value (Okigbo, 1975). The fruits are sold both in rural and urban areas by people who take to the trade as their means of livelihood.

According to Schwartz (1973), marketing embraces business activities that direct the flow of goods and services from the producer to the consumer or user. These activities or functions of marketing include buying, packaging, pricing, transporting, storing, advertising and selling (Lyon and Ivančevich, 1976). Unlike the markets for timber, NTFP markets are not organized, and information on them are lacking because of the neglect of the NTFP sector by governments and researchers. However, in a bid to diversify and maximize the utility of forests, more emphasis is now being placed on NTFPs in terms of research (Falconer, 1990, 1992, 1995; Nkwatoh, 1994, 1997; Ndouye, 1995; Ndouye *et al.*, 1997). Moreover, some State Forest Directorates in Nigeria have made efforts to place higher values on these products, which hitherto, had nominal prices because they did not reflect the values that consumers placed on them (Udo, 1994).

Although some studies have been carried out in respect of some NTFPs in some parts of the country (Adekunle, 1971; Agbor, 1986; Omoluabi, 1994; Popoola and Oluwalana, 1998), no such studies have been undertaken in Akwa Ibom State so as to provide information on the marketing of *Chrysophyllum albidum* fruits. Therefore, this study was undertaken to provide baseline information on the marketing of the fruits in order to improve on the marketing activities and ensure enterprise, profitability and consumer

satisfaction. The specific objectives of the study were to:

- (a) Provide general information on the gender, age and educational status of the traders
- (b) Identify the marketing channels
- (c) Assess the structure, conduct and performance of the marketing activities
- (d) Identify the problems that affect the marketing of the fruits and make recommendations for improvement.

For purposes of this study, the African star apple fruits market was divided into two, namely:

- (1) The produce market from which the fruit sellers sourced for the fruits they sold to the final consumers
- (2) The consumer market in which the sellers interacted directly with the final consumers who bought the fruits for ultimate consumption.

METHODOLOGY

The study was carried out in Uyo which is the capital of Akwa Ibom State and is located between latitudes 5°00' and 5°15'N, and longitudes 7°15' and 8°00'E. Structured questionnaires were issued to 100 randomly selected star apple fruit traders for information on certain variables, which helped in assessing the structure, conduct and performance of the market, and identifying the problems faced by the traders. The structure measures used in this study included marketing channels, product differentiation and degree of vertical or horizontal integration (Rahji, 1981). The market conduct measures were price determination, sales promotion policies and exclusionary strategies against rivals and/or potential entrants. Market performance was measured by comparing the relative costs of fruits at source and at the retail outlets. The data were analyzed and tabulated as frequency distribution and percentages. Means of relevant variables were estimated from the frequency distributions as explained by Hall (1978), where applicable.

RESULTS

Table 1 shows that 72.6% of the respondents indicated that star apple fruits ripened in January and February, while 20.8% of them indicated November and December. Only 6.6% indicated March and April.

The traders travelled between 1 and 20 kilometres away to source for the fruits they sold (Table 2), while 61.6% of them travelled between 1 and 5 kilometres, and 27.3% between 6 and 10 kilometres, with an estimated average distance of 5.8 kilometres. Transportation was by motorcycles (40%), bicycles (39%), buses (19%), and trekking (2%).

Table 3 shows that 23.2% of the respondents were male while 76.8% were female. Only 1.0% and 3.0% of the respondents were below 20 years, and 60 years and above respectively, whereas 77.8% were in the 30 to 49 age classes.

Majority (75.8%) of the respondents had primary education or no education at all and the highest proportions of both male (95.7%) and female (69.7%) respondents were in this category (Table 4). 24.2% of the respondents had the West African School Certificate or its equivalent. In this category were 30.3% of the female and 4.4% of the male respondents. 28.3% of the total number of respondents was below primary six, while there was none with a diploma or higher degree.

Table 1: Ripening period of star apple fruits

Period No.	%	Respondents	
		No.	%
November to December		22	20.8
January to February		77	72.6
March to April		7	6.6
May to June		0	0.0
Total		106*	100.0

Source: Field Survey (2001). *Some respondents indicated more than one period.

Table 2: Distance travelled to source for the fruits.

Distance (Km)	Respondents	
	No.	%
<1	0	0.0
1 - 5	61	61.6
6 - 10	27	27.3
11-15	5	5.1
16-20	6	6.1
>20	0	0.0
Total	99	100.1; mean =5.8km

Source: Field Survey (2001).

Table 3: Gender and ages of star apple traders.

Gender	Age (years) and No. of Respondents						Total	
	<20	20-29	30-39	40-49	50-59	60 & above	No.	%
Male	0	0	12	7	1	3	23	23.2
Female	1	7	23	35	10	0	76	76.8
Total	1	7	35	42	11	3	99	100.0
%	1.0	7.1	35.4	42.4	11.1	3.0		100.0

Source: Field Survey (2001).

Table 4: Percentages of traders according to educational status and gender.

Gender	Below Primary Six		Primary Six		WASC/ Equivalent		Diploma/ First Degree		Higher Degree		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	7	7.1	15	15.2	1	1.0	0	0.0	0	0.0	23	23.2
Female	21	21.2	32	32.3	23	23.2	0	0.0	0	0.0	76	76.8
Total	28	28.3	47	47.5	24	24.2	0	0.0	0	0.0	99	100.0

Source: Field Survey (2001).

As shown in Table 5, 73.5% of the respondents had been in the trade for 1 to 5 years. Estimated mean duration of traders in the trade was 4.6 years.

The respondents (71.7%) sold the fruits for 3 to 4 months annually, when the fruits were in season (Table 6). The estimated mean duration of sales was 3.1 months per annum.

According to Table 7, 4.1% of the respondents owned fruit

trees from which they sold the fruits directly to wholesalers, retailers and consumers. 29.6% of the respondents bought their stock of fruits from middlemen, while 66.3% bought their stock directly from the fruit tree owners. The marketing channels can therefore, be modeled as in Fig. 1 which shows that the producers who grew, and harvested the fruits were themselves involved in, even, the retail trade. The wholesalers equally operated as retailers.

Table 5: Percentages of respondents according to duration in the trade.

Duration (years)	Respondents	
	No.	%
<1	6	6.1
1-5	72	73.5
6-10	13	13.3
11-15	3	3.1
16-20	1	1.0
>20	3	3.1
Total	98	100.1; mean = 4.6 years

Source: Field Survey (2001)

Table 6: Yearly duration of fruits sales.

Duration (months)	Respondents	
	No.	%
<1	0	0.0
1-2	25	25.3
3-4	71	71.7
5-6	3	3.0
>6	0	0.0
Total	99	100.1; mean = 3.1 months

Source: Field Survey (2001).

Table 7 Sources of fruits sold.

Source of Fruits	Respondents	
	No.	%
1. From fruit tree owners	65	66.3
2. From middlemen	29	29.6
3. From sellers' own stands	4	4.1
Total	98	100.0

Source: Field Survey (2001).

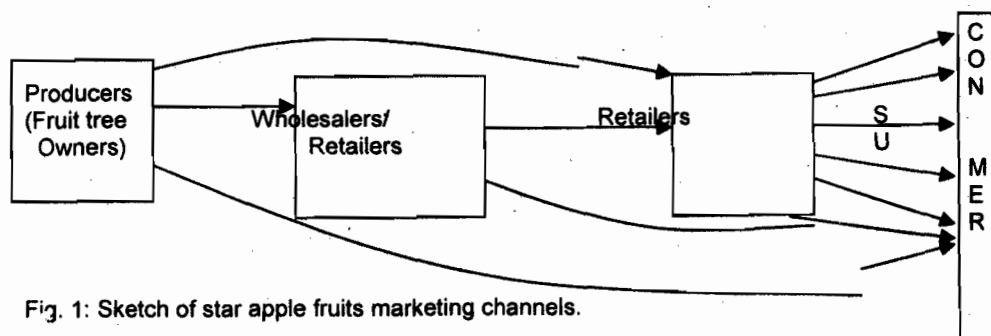


Fig. 1: Sketch of star apple fruits marketing channels.

Table 8 shows that 42.4% of the respondents were wholesalers, comprising 19.2% male and 23.2% female. 37.4% of the respondents were sole retailers who were all female, while 20.2% of the traders operated both as retailers and wholesalers.

The only aspect of vertical integration practiced in the trade was the cultural use of the seeds as rattles around the waist and ankles by traditional dancers. However, there was horizontal integration as the sellers commonly traded star apple fruits along with the sale of other fruits such as *Garcinia kola* (bitter kola), *Aframomum melegueta* (alligator pepper) and *Dennettia tripetala* (pepper fruit). There was neither product differentiation nor advertising as a means of promoting sales.

Although the trade was not a monopolistic one, there were some barriers to prospective entrants through the formation of 'localized' market unions. The price of fruits was fixed by haggling, although there was usually a going-price below which the seller would not sell.

A batch of ten wholesome fruits was sold at between ₦6 to ₦10 and ₦11 to ₦15 (approximately US4.5¢ to 7.5¢ and US84¢ - 11¢ respectively at US\$1.00 = ₦135.00) by 60.8% and 35.1% of the respondents respectively (Table 9). However, when the fruits were in season, wholesalers and retailers respectively sold a batch of ten fruits for ₦5.00 and ₦10.00, but about 2 for ₦5.00 when the fruits were just coming into or going out of season. The estimated average retail price per batch of ten fruits was ₦10.17.

Table 8: Classification of traders according to their roles in the marketing channels.

Gender	Role							
	Wholesalers		Retailers		Both		Total	
	No.	%	No.	%	No.	%	No.	%
Male	19	19.2	0	0.0	4	4.0	23	23.2
Female	23	23.2	37	37.4	16	16.2	76	76.8
Total	42	42.4	37	37.4	20	20.2	99	100.0

Source: Field Survey (2001).

Table 9: Average price of a batch of ten star apple fruits.

Price Range (₦)	Respondents	
	No.	%
1-5	0	0.0
6-10	59	60.8
11-15	34	35.1
16-20	4	4.1
>20	0	0.0
Total	97	100.0; mean = ₦10.17

Source: Field Survey (2001).

Fruits supply, availability of price information and the demand for the fruits were respectively indicated by 53.3%, 23.0% and 11.5% of the respondents as three major factors that affected the price of the fruits (Table 10), whereas packaging did not.

Storage was ranked by 47.5% of the respondents as the most important problem in the star apple trade, while 32.3% and 20.2% respectively ranked poor financial base and bad roads

as the second and third problems facing the trade (Table 11). 60.7% of the traders experienced fruit spoilage while 39.3% did not. Pests and diseases, poor harvesting and storage methods were three major causes of fruit spoilage as respectively indicated by 35.4%, 29.3% and 27.2% of the respondents (Table 12). The other cause was the handling method (8.1%). The fruits were stored in cool dry places (87.7%) and in containers with lime fruits (4.6%), but 7.7% of

Table 10: Some factors affecting price of the fruits

Factors	Respondents	
	No.	%
Supply of fruits	65	53.3
Price information available	28	23.0
Demand for fruits	14	11.5
Distance traveled to source for fruits	9	7.4
Fruit size	6	4.9
Packaging	0	0.0
Total	122*	100.1

*Some respondents indicated more than one factor. Source: Field Survey (2001).

Table 11: Problems facing the star apple fruits trade.

Problems	Respondents	
	No.	%
Storage	47	47.5
Poor finance (capital)	32	32.3
Bad roads (transportation)	20	20.2
Others	0	0.0
Total	99	100.0

Source: Field Survey (2001).

Table 12: Causes of fruit spoilage.

Causes	Respondents	
	No.	%
Pest and diseases	35	35.4
Harvesting method	29	29.3
Storage	27	27.3
Handling method	8	8.1
Total	99	100.1

Source: Field Survey (2001).

Table 13: Duration of storage.

Duration (Days)	Respondents	
	No.	%
1-2	80	80.8
3-4	13	13.1
5-6	1	1.0
7-8	0	0.0
>8	5	5.1
Total	99	100.0; mean = 2.1 days

Source: Field Survey (2001).

the respondents did not store the fruits but bought enough quantities as could be immediately sold out.

Table 13 shows that 80.8% of the traders stored the fruits for 1 to 2 days and 13.1% for 3 to 4 days with an estimated mean storage duration of 2.1 days. According to 94.9% of the respondents, supply was generally enough to meet demand during the fruiting season.

DISCUSSION OF RESULTS

African star apple fruits ripened for harvesting annually in January and February (Table 1). This observation was in line with that of Keay *et al* (1964). However, some early starters could ripen in December and the late starters in March. Since the fruits were seasonal, the traders could only be in business within the period the ripe fruits were in season, and this, for about three months (Table 6). This problem is complicated by the fact that under the prevailing storage methods, the fruits could only be stored for about two days without spoiling or losing freshness and palatability.

The dominance of women in the trade was characteristic of the NTFP trade as earlier observed by Omoluabi and Abang (1994) and Udo and Ukpong (1998; 2002). The situation in the non-timber trade differed from that in the timber trade where

men dominated because of the tedious nature of the operations entailed in the latter (Udo, 2004). The bulk of the traders were within the 30 to 49 years age brackets (Table 3). This could be explained by the fact that in these age brackets more people who, apparently, had people to fend for, had to settle down on what they had found as a means of livelihood to shoulder those responsibilities. The increasing number of traders as age increased up to 49 years reflected the increasing need for job seekers that had ventured into the trade to settle down to cater for their increasing responsibilities. However, beyond 49 years, the number decreased with age, possibly reflecting the increasing exit of some traders either for better means of livelihood or through incapacitation by age.

People with very low educational qualifications, principally primary education, dominated the trade (Table 4). This could be because the trade required no training for special skills, and people with higher educational qualifications were more likely to have better employment opportunities than the former. As shown in Table 5, there was an increasing trend in the number of people joining this trade in the last fifteen years.

The star apple fruits trade was characterized by complex marketing channels, as there was no clear distinction between wholesalers and retailers. Apart from the producers (fruit tree owners) who dealt directly with the wholesalers, retailers and

consumers, some wholesalers sold directly to the retailers and consumers. Majority of the traders preferred buying directly from the producers, probably, to maximize profit since the price of fruits at retail outlets was about twice the price at which producers sold to the traders at source.

The horizontal integration of the sale of star apple fruits along with other NTFP fruits permitted diversification and improvement in income, as the traders were sure of one item or the other to sell even when some of the species were out of season. This notwithstanding, vertical integration would be very beneficial because with the potential of star apple fruits for jam, jelly and wine syrup production (Onyeagocha and Okeke, 1975), fruit wastage would be reduced. The use of the seeds as rattles for traditional dances was of no economic importance to the traders, as they were not sold for such a purpose.

Haggling, as a marketing strategy, could benefit any of the two parties involved in a transaction depending on the amount of information they have on the going price in the market. This points to the importance of price information as a price determinant. However, haggling wastes time and depends on the emotional stability as well as the friendly and diplomatic dispositions of the two parties, especially the seller.

Star apple fruits price was very high at the beginning and towards the end of the production season when the supplies of the fruits were low, while the demand was very high and far outstripped supplies. It dropped considerably as the production season progressed to its peak with progressive increase in fruits supplies. These observations were in line with those of Nkwatoh (2000) in respect of *Irvingia* fruits. Because of the seasonal nature of the fruit supplies coupled with storage problems, fruit supply was the most important factor affecting the price. Price information helped the fruit marketers not to sell below the going price, although they haggled for higher prices, which depended on the prospective buyers' awareness of the going price. The interaction of the forces of demand and supply was also an important determinant of price (Upton, 1973).

Generally, the distance travelled to source for the fruits affected the price at which the fruits were sold because the farther the distance was, the more would be the total transportation cost which, in turn, would increase the unit price and vice versa (Upton, 1973). This could adversely affect the demand for the fruits (Lyon and Ivancevich, 1976). Thus, the traders sourced for fruits within the shortest possible distance they could have the fruits. The preference for motorcycles and bicycles as the common means of transporting the fruits could be attributed to their ability to circumvent pot holes and traffic holdups with ease and penetrate the suburbs, the last two attributes of which buses were not very adaptable to, without excessive delay and cost, respectively.

Fruit size affected fruit price because the larger the fruits were, the fewer per batch of fruits the traders generally offered for sale at a given price. This size grading was important in fruits that were eaten fresh or were processed before marketing (Agbaka, 1986). There was no product differentiation and, as observed by Nkwatoh (2000), there was an element of imperfection in pricing because of lack of standards. Advertising was non-existent, while packaging and storage methods were still in their rudimentary stages apparently because of the small-scale nature of the marketing ventures, their poor capital base and lack of awareness of the need for innovations by the buyers and sellers.

The fruit traders limited prospective entrants into the trade through 'localized' star apple fruit traders' unions. Similar unions were common features in small-scale marketing businesses in Nigeria (Udo and Ukpong, 2002; Udo, 2004). These unions preclude competition by limiting the number of entrants into the trade and their chances for higher profits. Entry was possible when a prospective entrant fulfilled the entry requirements.

The most important of the three major problems facing the trade was storage which accounted for about 27% of fruit spoilage suffered by the traders. With the prevailing traditional storage method of just spreading the fruits out in cool dry places, the fruits could only be stored for an average of two days without losing their freshness and palatability. Although diseases and pests were identified as the major cause of fruit spoilage, these organisms mostly invaded fruits that have been bruised or damaged due to poor harvesting and handling techniques before exacerbation by poor storage conditions.

CONCLUSION

The major problems facing the trade were storage methods, inadequate capital base and poor transportation network and fruit spoilage. Fruit spoilage was attributed to pests and diseases, poor harvesting and storage techniques. It is suggested that fruit spoilage and wastage could be reduced through vertical integration of fruit sales and processing of some of the fruits into fruit juice, jams and jelly. More studies are necessary to find better harvesting and storage methods that would lengthen the shelf life of the fruits and reduce spoilage. It is also essential to investigate the pests and diseases, which militate against a profitable star apple fruit trade. The traders should be encouraged through soft loans, possibly under the various Poverty Alleviation Programmes at all levels of government, while they themselves should form co-operative groups to raise capital for their trade.

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