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Retail Sale of Wild Edible Fruits in Urban Areas of Sub-Saharan Africa: A Case Study in Ouagadougou Burkina Faso

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***Abstract* – In sub-Saharan Africa, the local fruit trade is becoming more prosperous and presents itself as a promising sector for socio-economic development. The implementation of an effective marketing system requires extensive research throughout the marketing chain of local fruit. Thus, a study was conducted in Ouagadougou, one of the great capitals of West Africa. The objective of the study was to characterize the demographic structure of retailers, their gender, and their age and also to determine the most-selling fruits. For this, a socio -economic survey was conducted on auction sites of local fruits. The most sold fruit are *Ziziphus mauritiana, Lannea microcarpa*, *Vitellaria paradoxa* and *Saba senegalensis*. These four fruits occupy 55.54 % of retailers marketing channel local fruits. These fruits are available, preferred by consumers and provide relative satisfactory profits to the retailers. The local fruit market is 78% dominated by women. Almost (91%) retailers cannot read or write. Young men under 30 years are rare in the retail sale of local fruits. The parameters that determine the choice of units of selling fruits are: volume, the nature of the fruit, the pattern of behavior of the fruit after maturity and fruit shape. Of these four parameters, those who have a strong determination on the choice of unit of sale are the behavior of the fruit after maturity and the nature of the fruit. A similar study on consumers will contribute to best understanding of local fruits trades.**

***Keyword* – Socio-Economic, Fruits, Gender, Education Level, Retail, Sale, Sale Unit.**

I. INTRODUCTION

Trade of food resources is a long dated human activity ° [10]. With globalization, many food resources are traded in international circuits. However for uncultivated food plant resources, marketing channels are not well known that these resources have long been neglected in favor of crops[8]. Qualitative and quantitative ethnobotany studies have now shown that these resources have an important part in the diet of the people involved in developing country and maintaining their socio economic balance and food needs [2;4,8].

The contribution of trade of food resources for socio - economic development of each state is very important[6]. For developing countries, the emergence of trade of uncultivated plant food resources is a new opportunity to create additional conventional socio- economic sectors. Culminating in the establishment of effective institutions to strengthen these sectors, it is essential to know and understand the current system of food marketing proceed by spontaneous plant to establish an effective model. The retailers play an important role in the marketing channel of local fruits. They are in direct contact with buyers and consumers. A best knowledge of retail trade of local fruits is a base to enhance the market. The main objective of this study is to establish the demographic structure of retailers, to determine the best-selling fruit, fruit sales channels and the parameters that determine the choice of units selling of the fruit.

II. METHOD

Preliminary survey was carried out to retain ten (10) markets, 10 administrative building and ten (10) avenues of the city of Ouagadougou (Fig.1). During two successive years (2011-2012; 2012-2013), marketing surveys on local fruits were carried out on selected sites. During the period of availability of each fruit, we made passages in the avenues and sales sites to conduct investigations. Data were collected on age, gender, level of education, modes of sales, sales sites, sales units and the educational level of the retailer. Retailer'sage were sectioned in age groups depending on the precision that gave therespondents. To search the best-selling fruit we counted the number of retailers involved in the sale of any given fruit. Thus the percentage of retailers who are implicated in the sale of a given fruit was calculated. Two determination tests were made in order to know the main parameters that determine the choice of unit sales and the motivation of any retailer in selling a given fruit. To perform these tests it was obligatory to transform qualitative variables to quantitative variable. For this,values ranging from 1 to 5 were assigned to each mode of sale. The value of the mode of sale of fruit is given by the following formula.

$$V = \frac{1}{N}\sum_{1}^{5} vi$$

V: Selling Unit Value of the Fruit
N: Number of Selling Unit
Vi: Value of a Given Selling Unit

Tests for determining the influence of various parameters on the flow of sales of each fruit were made. For this purpose, values were assigned to the various parameters in order to perform the test of determination between each parameter and the number of retailers involved in the sale of the fruit (Table 1). The assignment of values is based on the surveys we conducted with retailers.

III. RESULTS

Demographic structure and flow of commercial fruit

The local fruit market is dominated by women (Fig. 2). they are involved in the sale of all eleven fruit. In contrast, there are only 22 % of men who are involved in the local fruit market. Generally, these are people from 30 to 40 years and 40 to 50 years who dominate this market. Women are the dominant actors in all age brackets retailers. The men are in the minority and do not sell the fruits of *Ziziphus mauritiana*. In the younger age groups, men are rare compared to women. The majority of men who sell local fruits have more than 35 years. *Ziziphus mauritiana*, *Saba senegalensis*,*Lannea microcarpa* and *Vitellaria paradoxa* are the most sold by retailers in the market (Fig. 3) fruit. These four fruits occupy 55.54 % of retailers marketing channel local fruits. The under-sold fruits are *Vitex doniana*, *Adansonia digitata* and *Gardenia erubescen*s. The factors which determine the motivation of a retailer in the sale of a given fruit are: the season of availability of the fruit, the status of processing, the level of availability, consumer appreciation and the relative income generated (Table 1). The level of availability, consumer appreciation and income generated are the three main parameters that determine the flow of fruit sold (Table 3).

Units of selling of the fruits

The main sales units of the fruitsare: selling lots of fruiting branches, selling by lots of fruits isolated, the use of containers, sale of fruits per unit and the use of plastic packaging (Table 2). The dominant mode of sale is the selling by lots of isolated fruits (54.54 % of fruit). Only fruits of *Ziziphus mauritiana*, *Balanites aegyptiaca* and *Detarium microcarpum* are set packaging before being marketed. The parameters that determine the units selling of the fruits are: volume, the nature of the fruit, and the pattern of behavior of the fruit after maturity and fruit shape. Of these four parameters, those who have a strong determination on the choice of sale are the behavior of the fruit after maturity and the nature of the fruits (Table 4).

Fashion of selling of the fruit and education level of retailers

They are two categories of retailer: the hawkers and the sedentary retailers. Hawkers are younger than sedentary and are mostly girls. The points of sale were the sedentary settle to sell the fruits are: roadsides, markets and administrative buildings. Among these points of sale, it is at roadsides that we met the most number of sedentary retailers. Almost retailers cannot read or write (Fig. 4). Only one percent of retailers have secondary education and no one of them has high level education. Six percent of retailer has primary level education but among them we have 2 % which are enrolled during the day and 4 % practice evening classes.

IV. DISCUSSION

The local fruit market is an easy accessible market because it does not require heavy financial investments. Thus, the least affluent social strata can easily fit in the retail trade of local fruits. Human values play an important role in the gender distribution of the retail sale of local fruits. The retail trade of local fruit does not absorb all the working-age population groups. Shame, fear of being judged negatively and low profitability are the main reasons on why young males are based to decline the sale of the fruits. The different sexes have different motivations in the retail sale of local fruits. Women are less ambitious than men, despite the poor economic returns they are investing for a few benefits. Men are interested to social and professional activities that they hope to have the big money back. This is a general situation of sub-Saharan Africa, where women are the main actors of the economy of the smallmarkets[10]. However, all categories combined retailer including gender, age and level of education does not take into account the energy and time it deploys to fix the selling price of the fruit to the consumer. The main objective of the retailer is to get profits when hesells. Thus, the most sold are valued by consumer; they are available and providerelatively adequate benefits to retailers. The most traded species deserve a special look into the prospects for strengthening the socio-economic sectors of the local fruits. Fruits available in large quantitieson the market precisely *Ziziphus mauritiana*, *Saba senegalensis*, *Lannea microcarpa* and *Vitellaria paradoxa*reflect the state of their natural productivity. These are West African savannas fruits of agroforestry parklands [3]**.** Since a long time farmers have realized the importance of these species in agricultural parks and have kept them. In addition to their abundance in agro-forest parks, the most traded food fruits have interesting features. *Ziziphus mauritiana* is sweet, *Lannea microcarpa* is sweet, juicy and attractive,*Saba senegalensis* is attractive and juicy, sour or sweet,*Vitellaria paradoxa* is attractive and sweet. In other studies made in Burkina Faso and other parts of sub-Saharan Africa, it also cited*Ziziphus mauritiana* and *Vitellaria paradoxa* as among the most traded in urban and semi- urban areas [1, 4, 7]. Putting the fruits in simple plastic packaging is a prerequisite for the implementation of sophisticated packaging suitable for long-term sales of the fruit. Setting fruit packaging reflects the fact that retailers develop their own initiative to improve the flow of fruit modes.There is a link between the biological characteristics of the fruit and how they are sold. For small fruits, the retailer loses time whether to count the number of fruit before pricing. Where stockpiling, this is especially unique form of commercialization of *Lannea microcarpa*. The downside is that the retailer cannot stabilize different lots. It is therefore important to improve the mode of sale by usingunit's sales precise. Trade in local fruit is a trade dominated by people with a rural character, which always have a lifestyle not modernized. People with a high level of education are not interested to trade in local fruit, which is a handicap in improving the performance of this market. This trade is not a conventional business which can provide economic revenues satisfying persons of high intellectual class. The fact that people of high education are not interested to trade of local fruit can be considered as an indicator of socio -economic system failed to rural

and non- integrated into an institutional mechanism for value. Hawker vending is a way of sale which allows the retailer to meet a wide range of road user's effective and high consumers. In this case the retailer goes to a variety of people in which he hopes to meet with consumers. In the case of sedentary retailers, road users are attracted to the visual perception of fruit and purchase them. This is why sedentary retailer settled along the highway where a large number of flows through to increase the contact between people and the fruit, and chances to meet buyers. Sedentary retailers spend less energy to sell the fruit than the hawkers. The exhibition and the desire to increase the number of buyers are variables that motivate retailers to settle atroadside, in the markets and in public buildings and also to practice nomadism.

V. CONCLUSION

The retail market of local fruit is an under-estimated market. This is the crux of the operation of socio-economic system of local fruits. This market accounts for both men and women who did not receive qualified training. The majority of retailers are aged between 30 and 50 women. The most sold fruit are *Ziziphus mauritiana*, *Saba senegalensis* , *Vitellaria paradoxa* and *Lannea microcarpa*. The main parameters that determine the choice of selling fruit by the retailers are the availability of the fruit, the appreciation of the consumer and the profit generated. Preferred sites selling fruit are avenues borders for better fruit set for users. This study on retailers highlights the neglect of young man- under 30 to fit into the sale of local fruits. A similar study on the consumer will establish a more effective institution selling local fruits. The flow of resources traded is an important parameter in increasing the number of retailers. Age and sex are two very critical anthropological variables in the retail sale of local fruits. Human values, economic, yield and nutritional characteristics are the main variables that determine the dynamics of the retail sale of local fruits. For fruits low marketed in detail, it should look for strategies that can help to increase their sales level.

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Table 1: Key parameters determining the levels of sales of local fruits

Fruits	PRSF	SA	SAV	LA	LAV	LPS	LPSV	LAC	LACV	SL	SLV	REG	EGV
Vitex doniana	1.72	Moist season	3	Low	1	Not processed	0	Low	1	Less than 10 days	1	Low	1
Gardenia erubescens	5.12	Dry -cold season	3	Low	1	Not processed	0	Low	1	Less than 10 days	1	Low	1
Vitellaria paradoxa	13.67	Moist season	3	High	3	Not processed	0	Low	3	Less than 10 days	1	High	3
Detarium microcarpum	08.54	Dry -cold season	2	High	3	Not processed	0	Middle	2	More than 10 days	3	Middle	2
Lannea microcarpa	12.82	Moist season	3	High	3	Low processed	0	High	3	More than 10 days	1	High	3
Diospyros mespiliformis	7.69	Dry- cold season	1	Middle	2	Low processed	0	Middle	2	Less than 10 days	1	Middle	2
Adansonia digitata	5.12	Dry and cold season	1	Middle	2	Strongly processed	3	Middle	2	More than 10 days	3	Middle	2
Saba senegalensis	12.82	Moist season	3	High	3	Middle processed	2	Middle	2	Less than 10 days	1	Middle	2
Parkia biglobosa	07.69	Hot -dry season	2	High	3	Low processed	0	Middle	2	More than 10 days	3	Middle	2
Ziziphus mauritiana	16.23	Dry - cold season	2	High	3	Not processed	0	High	3	More than 10 days	3	High	3
Balanites aegyptiaca	08.54	Dry -cold season	2	Low	3	Not processed	0	Middle	2	More then 10 days	3	Middle	2

Legend: PRSF: Percentage of Retail Selling the Fruit; SA: Season of Availability; SAV: Season of Availability Value; L A: Level of Availibility LAV: Level of Availibility Value, PS: Processed Status. LAC Level of Appreciation by Consumer; LACV: Level of Appreciation by consumer Value; SL: Shelf life , SLV: Shelf life Value; REG: Relative Earnings generated, EGV: Value of earnings generated

Table 2: Selling unit of the fruits and their values

	Selling Unit Value of the Fruits	Sale cash pile of fruiting branches (1)	Sale heap isolated fruits (2)	Sale with a container (4)	Sales in units of fruit (3)	Sale in Plastic Packaging (5)
Parkia biglobosa	1	+	-	-	-	-
Saba senegalensis	2	+	-	-	+	-
Diospyros mespiliformis	3	-	+	+	-	-
Vitex doniana	2,5		+	+		
Ziziphus mauritiana	5	-	-	-	-	+
Vitellaria paradoxa	4,5	-	+	+	+	-
Lannea microcarpa	1	+	-	-	-	-
Adansonia digitata	3	-	-	-	+	-
Balanites aegyptiaca	3,5		+	-	-	+
Detarium microcarpum	5		+	+	-	+

(): Value of a Given Selling Unit of sale

Table 3: Determination of the main parameters in the level of sales of fruits

Parameters	SA	LA	PS	LAC	SL	REG
Coefficient of determination	0,0314	0,614	0,00096	0,769	0,013	0,769

Legend: SA: Season of Availability, L A: Level of Availability, PS: Processed Status. LAC Level of Appreciation by Consumer, SL: Shelf life, REG: Relative Earnings Generated

Table 4: Determination of the main parameters in the choice of unit sales

	Volume	Nature of fruit	Behavior of mature fruit	Shape
Coefficient of determination	0,0402	0,1862	0,6209	0,088

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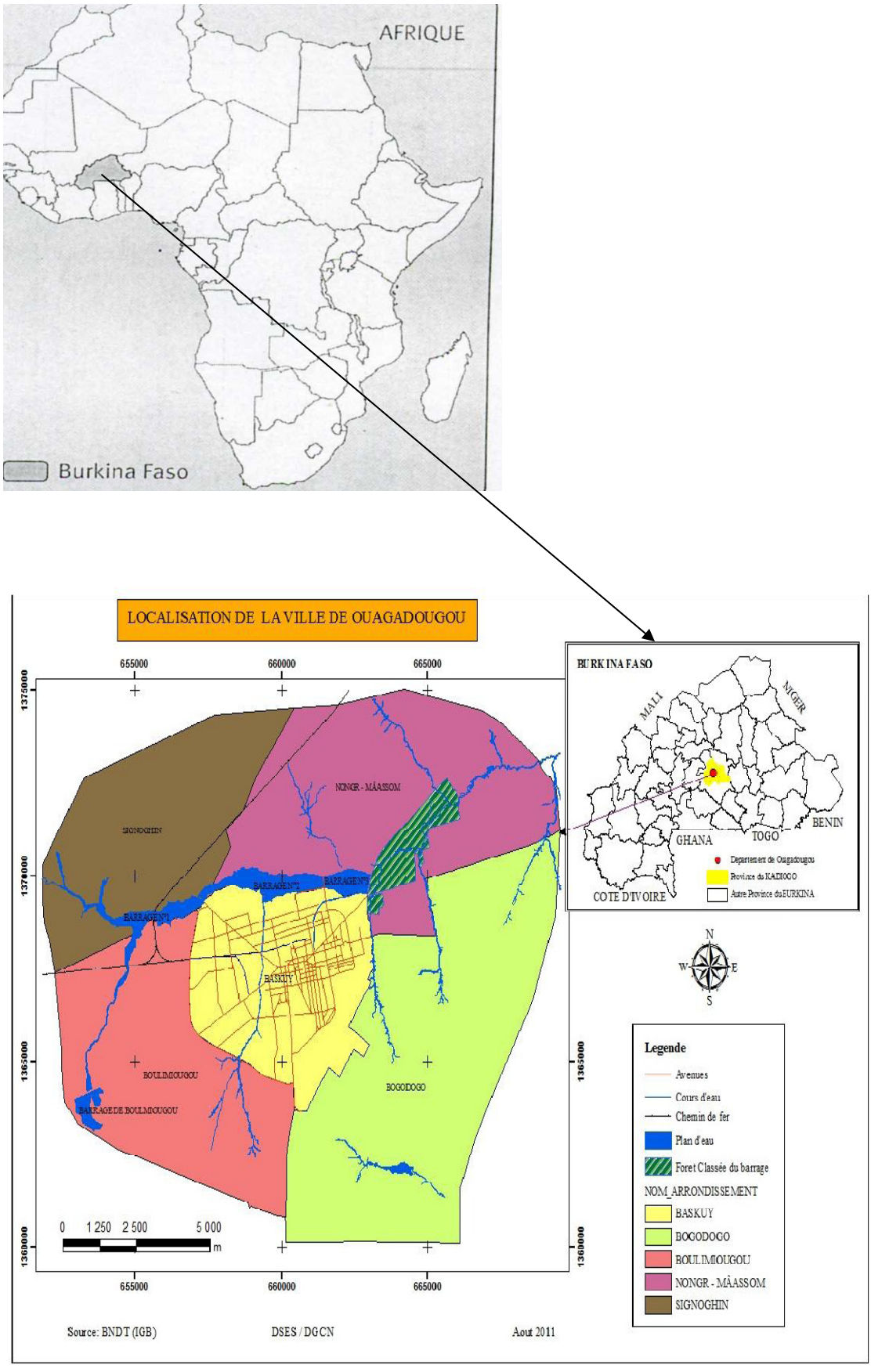

Fig.1. Localisation of study area

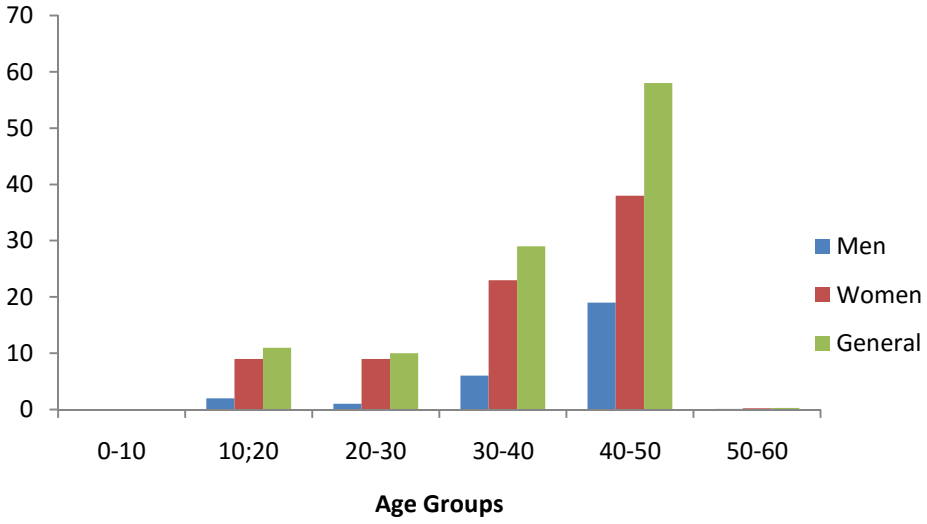

Fig.2. Demographic structure of retailers

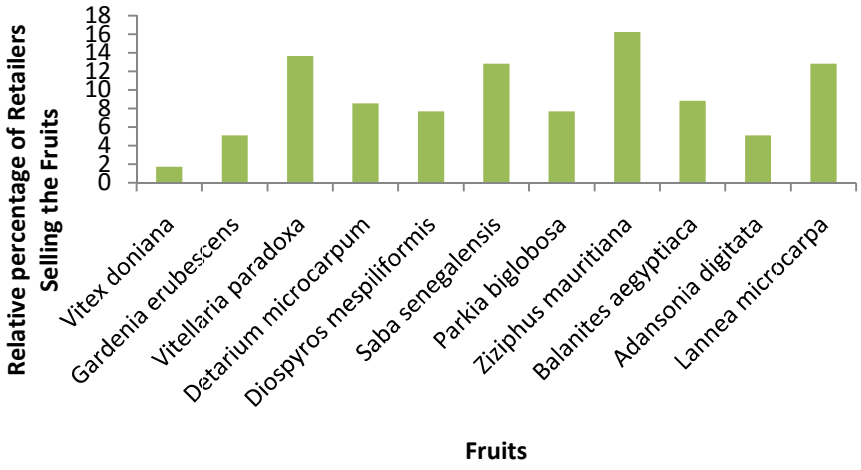

Fig.3. Level selling of local fruits by retailers

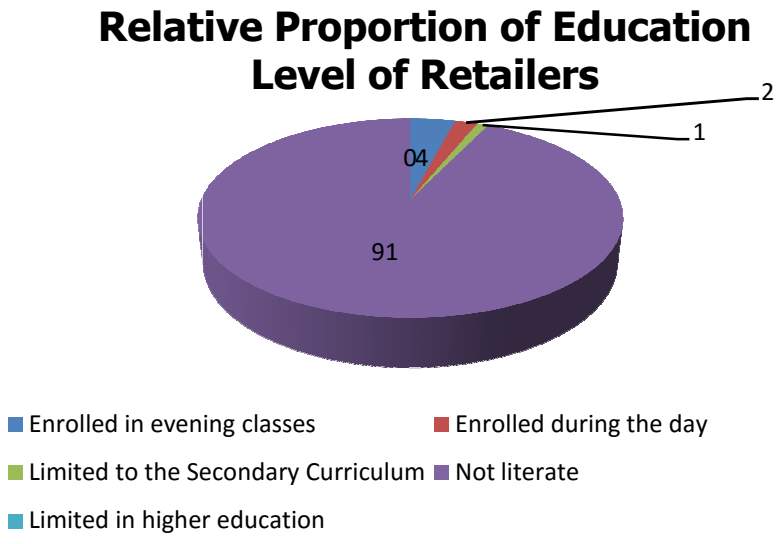

Fig.4. Educational attainment of retailers of local fruits