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Assessment of Fruit Consumption and Marketing Chains in Aleta Chuko District of Southern Ethiopia

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Abstract: The aim of this study was to assess ways of utilization and marketing chains of fruits in Aleta Chuko district of Southern Ethiopia. The area of study was purposively selected considering the availability of fruits at any season. Then four sites (kebeles) were randomly selected to conduct this study. A total of 250 farm households who produce fruit were selected. To collect the required information's, a structured questionnaire were prepared and dispatched through data collectors. All the collected data were subjected to SPSS version 20 for analysis. The results showed that high production percentage of pineapple (95%) followed by avocado (76.2%) and papaya (66.3%) were noticed. Although there was such production amount, the percentage of household consumption level for pineapple, avocado and papaya was 28.6, 37.5 and 28.7 respectively. Moreover, the percentage amounts sold to market for pineapple, avocado and papaya were 71.4, 53.8 and 68.5 respectively. Most of the households (61.4%) did report that they sell their fruits to nearby markets whereas 36.7% did sell at their own farm gate. Most of the households responded that 5 to 10% of postharvest fruit losses occurred during transportation. The causes of such losses were reported as the type of transport used for fruit marketing as a major factor which accounts for 48.6% in addition to type of packaging material (31%) and distance to market (18.6%).

Keywords: Consumption; Fruits; Market chains; Postharvest losses.

1. Introduction

Food and nutrition insecurity reduction in developing countries continues to be a challenge as it is affected by a complexity of factors [1-3]. Increasing the food availability is therefore not only increasing the productivity in agriculture, there is also a need to lower the losses [4-6]. In theory the food availability can also be increased by reducing the fruit and vegetable losses along the value chain. This intern can contribute to food and nutrition security [7]. However, expanding the scale of fruit production is often hindered by lack of market access, market information, and many biological factors [8]. Various research projects have been done in the past to develop fruit and vegetable value chains in developing countries in order to reduce post-harvest losses and to develop linkages between value chain actors.

The different climatic zones in Ethiopia make suitable for different kinds of agricultural production systems. Among the agricultural commodities, production of fruit is paramount to the satisfaction of different communities in terms of nutritional benefit. Horticultural crops can be differentiated as fruits (permanent crops) and vegetables (short season crops). Accordingly, permanent crops are long term crops that occupy the field planted for a long period of time and do not have to be replanted for several years after each harvest [9]. More than 47 thousand hectares of land is under fruit crops in Ethiopia. Bananas contributed about 60.56% of the fruit crop area followed by Mangoes that contributed 12.61% of the area [9]. This survey also explained that nearly 3.5 million quintals of fruits was produced in the country. Bananas, papaya, mangoes and orange took up 55.32%, 12.53%, 12.78% and 8.35% of the fruit production, respectively. The same survey also revealed that various kinds of fruit crops grow in different regions of the country yielding varying quantities of fruits within the private peasant holdings in the traditional way. The volume of fruit production obtained from the peasant farms is small signaling the absence of development in fruit farming.

Postharvest losses of fruits occur across different chains of marketing channels. Still the present rate of consumption of fruits is far below the minimum daily requirement of 400 g per capita as recommended by FAO [10] in Ethiopia. One of the case studies showed that in rural Ethiopia it was found that rural consumers in the production areas had better access to fresh fruits and vegetables than elsewhere in the country. Despite the growth recorded in

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the global fruit and vegetable production and trade, the food consumption per capita in Africa is still well below the recommended 400 gram of fruits and vegetables per day (146 kg per person per year). Combined the annual fruit and vegetable consumption in Africa is less than 100 kg per person, which equals around 250 gram per capita per day [11]. Therefore this study was aimed at assessing fruit consumption and marketing chains in Aleta Chuko district. The points that initiated to do this study in this area were; 1) there is a variety of fruit crops produced in most of the annual seasons, 2) huge postharvest losses encountered during production glut, 3) Fragmented marketing approaches are noticed in the area.

2. Materials and Methods

2.1. Description of Study Area

The study was conducted at Aleta Chuko district of Southern Nations, Nationalities, and Peoples' Regional State (SNNPRS) of Ethiopia. The district is bordered in the south by Dara, in the southwest by the Oromia Region, in the west by Loko Abaya, in the north by Dale, and in the east by Aleta Wendo districts. There are permanent (fruit) and temporary (vegetables) production in the area apart from cereals and pulses. Based on the 2007 Census conducted by the CSA, Aleta Chuko district had a total population of 167,300, of whom 85,928 were men and 81,372 women; 5,673 or 3.39% of its population are urban dwellers.

2.2. Sampling Size

The study was conducted at four randomly selected *Kebeles* with total sample farm households of 250 who were purposively selected considering the availability of fruit production. The gross total number of samples was determined using single population proportion formula as indicated below and a total of 768 households were found. From this number only 250 farm households were used for this study based on the aforementioned reasons.

$$n = \frac{z^2 p(1-p)}{d^2} \quad \text{Where;}$$

$$n = \text{sample size}$$

$$z = \text{confidence interval} = 1.96$$

$$p = \text{estimated proportion of fruit util.} = 0.5$$

$$d = \text{margin of error} = 0.05$$

2.3. Methods of Data Collection

Structured questionnaire were prepared so as to collect the required data. The questionnaire were structured with the basis of the following core components;

- 1) Production of fruits in the area.
- 2) Harvesting mechanisms.
- 3) Postharvest handling methods.
- 4) Household consumption patterns.
- 5) Mode of marketing strategies.
- 6) Postharvest losses. With all the above core points the questionnaire were organized and dispatched through data collectors' after identifying the number of samples required from each Kebele.

2.4. Data Analysis

The collected data were arranged by coding the variable name and values on SPSS data sheet. Then all data were recorded and analyzed using SPSS version 20. Descriptive statistics with frequencies and percentages were used to express the results.

3. Results

3.1. Fruit Production and Household Consumption

The result in Table 1 indicates about the percentage of fruit production in the study area as well as the household consumption and amount sold to market. The result showed that there was high production percentage (95%) for pineapple fruit than any other fruits in the study area. The household (HH) consumption percentages of fruits are also listed in Table 1 for different fruits. Accordingly, from the result it was noted that, pineapple, papaya and avocado consumption were higher than other fruits. Moreover, these fruits account more percentage with regard to the amount of fruits sold to market.

Table-1. Percentage of fruit production and consumption by the farm household per year

Fruit type	Production (%)	HH consumption (%)	Amount sold (%)
Banana	42.4	14.3	52.5
Pineapple	95.0	28.6	71.4
Avocado	76.2	37.5	53.8
Papaya	66.3	28.7	68.5
Guava	29.5	11.2	25.5
Orange	15.1	9.5	45.7
Mango	33.7	22.9	47.4
Lemon	21.0	7.6	39.6

3.2. Fruit Harvesting Mechanisms and Stages

From the assessment result it was noticed that farm households used different techniques of harvesting for different fruits. As an indicator most of the households used color for judging the maturity level to harvest. From results in Table 3, most of the households (71%) did respond for the stage of fruit harvesting when it gets semi-ripened. Whereas 18.6 and 8.6 percent of farm households responded that the fruit is harvested when the fruit is raw and fully ripened respectively.

Table-2. Percentage of respondents for harvesting stages of fruits

Stages	Percentage (%)
Raw	18.6
Semi ripened	71.0
Fully ripened	8.6

3.3. Frequency of Fruit Consumption at Household Level

The results for consumption frequencies of households are indicated in Table 3. It was noticed that 72.9% of respondents did respond for consumption frequencies of fruits as occasionally, whereas 22.4% of respondents had a consumption trend as once in a week. And 2.9% of respondents reported that they had daily consumption trends.

Table-3. Percentage of respondents for frequency of fruit consumption at household level

Consumption trends	Percentage (%)
Daily	2.9
Occasionally	72.9
Once in a week	22.4

3.4. Place of Marketing Fruits

The results for percentages of households who did sell fruits in different places are indicated in Table 4. Among the total households, 36.7% did respond their fruits were sold at their own farm gate whereas 61.4% sold to nearby markets.

Table-4. Percentage of respondents for where to sell fruits

Place to sell fruits	Percentage (%)
At farm gate	36.7
Nearby markets	61.4

3.5. Postharvest Losses of Fruits During Marketing

The percent of losses recorded by the households were 5 and 10% as indicated in Table 5. From this 82.9% of respondents reported 5% loss of fruits whereas 15.2% of respondents reported 10% loss. However, all of the households did not respond for losses of fruits more than 10%.

Table-5. Percentage of respondents for losses of fruits

Fruit types	Percentage (%)
5 %	82.9
10 %	15.2
20 %	0.0
50 %	0.0

3.6. Causes of Fruit Losses

The results for causes of fruit loss in the study area are described in Table 6. It was noted that the type of transport used during marketing of fruits were the major causes of fruits loss which accounts for 48.6%, the type of packaging material used accounts for 31% and the long distance during transportation accounts for 18.6%.

Table-6. percentage of respondents for causes of losses of fruits during transportation

Fruit types	Percentage (%)
Long distance	18.6
Type of packaging	31.0
Type of transport	48.6

4. Discussions

As indicated in result [Table 1](#), it was noted that pineapple production percentage (95%) was higher than other fruits. Production percentage of avocado (76.2%) and papaya (66.3%) ranked the second. This result was in agreement with previous study done on the area [\[12\]](#). Moreover, it was also indicated that production percentage of mango, orange, guava and lemon was lower in the current study area. The household consumption percentage of avocado, papaya and pineapple was 37.5, 28.7 and 28.6 respectively. The reason for household consumption of these fruit was more than other fruit might be more production of these fruits was encountered in the study area compared with other fruits. However, the consumption frequency of fruits by the farm households was lower, even though production of fruits was there at all times. This might be due to lack of awareness on the nutritional benefit of fruit consumption by the households. For questions asked whether the households do have the experience with regard to value addition of fruits with other cereal based products or not, there was no any practice done with this aspect at all by any households used in this study. But in different studies it was investigated that consumption of locally available vitamin -A rich foods that can be prepared from cereals in combination with fruit and root crops can reduce the problem of vitamin- A deficiency [\[13\]](#). While comparing the production percentage and amount sold to market, it was noted that except pineapple fruit, less quantity of fruit supplied to the market. This might be due to quantity of fruit produced, market information, distance to market and extension access [\[14\]](#).

The stages of fruit harvesting used by the households were based on color preferences. In the result found in [Table 2](#) most of the households did respond that the harvesting stages for different fruits was when it gets semi ripened (71%). However, the percentage responded for raw and fully ripened were 18.6 and 8.6 respectively. This indicates that households did use different stage of harvesting for different fruits and also there might be less awareness with regard to when to harvest fruits in order to minimize postharvest losses [\[7\]](#).

With regard to marketing places for fruits, it was noted that most of the households did sell their fruits to nearby markets (61.4%). However, 36.7% of households who did sell fruits on their own farm gates. For this percentage variation, it was explained by the households that lack of transportation, lack of market information, perishability of fruits were a major constraint in fruit marketing [\[14\]](#). The results of postharvest losses of fruits in the study area showed that 82.9% of households reported 5% loss whereas, 15.2% of households responded 10% loss of fruits occurred during transportation. Most of the farm households positively responded (78%) to the questions asked whether they do have mechanisms to protect fruit from postharvest loss or not. This result was in agreement with the studies done by [Abadi, et al. \[15\]](#), which was reported as 78.4%. For such losses, 48.6% of households did report the type of transport used as a major causes of losses in fruits. However, the type of packaging material and distance to market represent 31 and 18.6% respectively. The postharvest losses of fruits are encountered at different supply chains of marketing [\[16\]](#).

5. Conclusion

The current study revealed that production, utilization and marketing of fruits in Aleta Chuko district. Accordingly pineapple production followed by avocado and papaya were dominant than other fruits in the study area. Although there is high amount of such fruits production, the household consumption level were less compared to other crops. Moreover, there was no value addition practice in the study area by the households with regard to using fruits in a variety of options. Most of the households did sell their fruits to nearby markets however, it was also encountered that more households who did sell their fruits at farm gates due to lack of transportation. The losses of fruits were encountered at different stages of marketing chains. In addition, the type of transport used for fruit marketing was the major causes of fruit loss apart from type of packaging material and the distance to market.

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