Analysis of the Level of Post-Harvest Losses in Orange Marketing Case Study of Yanlemo Orange Market in Kano State

James D, Bamishayi O M, Shamsuddeen J, Williams O, Olukunde T. Zainab M
Federal College of Agricultural Produce Technology,
Kano, Nigeria
melajames2016@gmail.com

ABSTRACT

This research was designed with the conscious intension to analyze the level of losses of orange in Yanlemo fruit market Kano state, the research work highlight on the causes of losses of orange, the factor that contribute to the orange deterioration and understand the level of these losses and prepare a solution to the problem. Oral interview was used in order to obtain data from the orange sellers on their socio-economic characteristic and marketing system. Random sampling was used to select 40 orange sellers from the sample frame of 200 orange traders. Structured questionnaire was used to collect data. Simple percentage and post-harvest model was used to analyze the information collected. The result shows that the entire 40 orange sellers that is 100% served the questionnaires were male. This is due to the nature of the job, religion and culture of the people, the result shows that that Poor transportation is one of the causes post-harvest losses in orange marketing in both wholesale and retail marketing, 100% of the wholesale agreed that poor transportation facility causes post-harvest losses while 80% of retailers said yes to poor transportation been causes of post-harvest losses. 62.5% of the wholesale respondent and 67% of the retailers agreed that pest and diseases causes post-harvest losses in orange marketing while 37.5% of wholesalers and 33% of retailers do not agreed that pest and disease causes post-harvest lost.52.5% of the wholesalers and 80% of the retailers indicates that poor market patronage is not cause of post-harvest lost, this implies that there is market for orange The result in table 3 reveals that at wholesale marketing of orange 51dosen were lost during sorting and at retail marketing 36 dozen were lost with values of N7650 and N 7200 respectively. During packaging 20 dozen were lost with value of N 3000, and at retail marketing 12 dozen were lost valued at N 2400. During storage78 and 64 dozen were lost during wholesale and retail marketing valued at N11700 and N12800 respectively. The studies indicates that 52 dozen valued at N10400 were lost during retail marketing and 60 dozen valued at N900 were lost during wholesales.

Key Words: Post, Harvest, Lost, Storage, Marketing

INTRODUCTION
BACKGROUND OF THE STUDY

Post-harvest losses in tropical fruits vary widely from 10 percent to 80 percent in both developed and developing countries (FAO, 2006). These losses occur all along the supply chain, beginning from the time of harvesting right up to packing, storage, transportation retailing and consumption (WFLO, 2010). In most developing countries, this is mainly due to the combination of poor infrastructures and logistics, poor farm practices, lack of postharvest handling knowledge and a convoluted marketing system (FAO, 2006). Kitinoja (2002), Ray and Ravi (2005) and WFLO (2010) observed that 40 to 50 percent of horticultural crops which includes, fruits and vegetables are lost before they reach consumers. Main reason for

waste is due to high rates of bruising, water loss and subsequent decay during postharvest handling (WFLO, 2010).

Orange fruit production as an important part in horticultural industry has emerged as a major economic activity in developing countries, especially those which were hitherto heavily dependent on agricultural production, often at subsistence levels. Horticultural producers in developing countries are mostly small farmers, and they are rarely organized into a formal cooperative or association. It is estimated that 10 to 20% of all farmers are producers of horticultural crops, sometimes in combination or rotation with field crops (FAO, 2010). Despite of economic importance, horticultural crops including orange fruits are important sources of plant nutrients, vitamins and minerals that are essential for human health and well-being, particularly for children and pregnant or nursing women (WFLO, 2010).

Post-harvest loss of orange fruit are due to lack of proper care, use of in appropriate harvesting equipment and materials lack of motivation and interest to improve and upgrade the harvesting and handling techniques from time to time. The problems related to packaging, storage and transportation facilities as factors for orange crops loss. high orange fruit post-harvest loss occur during harvesting marketing, transporting and storage the popularly mentioned time of orange fruits loss was during harvesting followed by marketing most of the materials and equipment used ware poor in quality for harvesting they use hand picking or collecting with equipment such as sickle, spade, hoe, axe, ladder, locally named "Balla", cloth, basket, canvas, sack, plastic bucket, palm oil container, weaved basket and containers. Several means ware used to transport the orange fruit from farm to temporary storage or to the market these include the human labour, donkey, horse, cart, camel, bajaj, mini bus locally called "Daina", mini and isuzu trucks. Long and rough road, climatic condition of the area and the rudimentary packing material increase the post-harvest loss of the orange fruit the diverse types of containers and equipment used for packaging served as a measuring unit during marketing most of the measuring unit or containers used were not standardized and uniform size but rather it was based on conventional type.

Although packaging, transport and storage are known to be used to mitigate the post-harvest loss by minimizing a gap between producer and consumer and between harvesting and consumption, the producer s did not have suitable storage facilities and marketing sites

The major factors for post-harvest loss of orange fruits during marketing were due to problems related to mis-handling in packaging, transportation, storage and display for sale most of the packing materials are in appropriate for the products that lead to mechanical damage, the use of public transportation for transporting passengers and commodities together, over loading and stacking and high temperature, rough road with high vibration and collision, lack of vehicle and its high cost and the use of draft Animals and human for transporting long distance in the absence of proper packing and stacking, lack of sorting the ripe and unripe constitute major problems, absence of warehouses for orange crops and use of human residence or working room as store were also factors that lead to Most of the post-harvest loss of orange fruit.

AIMS AND OBJECTIVES
The primary objective of the study is to analyze the level of post-harvest losses of orange in Yanlemo market in Kano state.
The specific aims are to:
1. describe the socio-economic characteristic of orange traders in the study area
2. Identify factors responsible for post-harvest losses of orange at deferent stages of marketing.
3. determine the quantity and value of losses encountered during marketing
4. Identify problems and suggest possible solution to problems associated with the losses.

Materials and methods

This study was carried out in Kano State. Kano State lies in the northern part of Nigeria between latitude 10^0 33' to 12^0 37' and longitude 7^0 34 to 9^0 25'E The 2006 population census estimates Kano state population at 9, 383, 68. Using the annual growth rate of 3.3% the projected population of Kano state by the year 2016 could be 12,480,298. The major tribes are Hausa and Fulani ethnic groups but other groups inhabiting the state include almost all major and minor tribes of Nigeria. Other Nationals from different continents of the world are also found in Kano (KNSG, 2006). The state is administratively consisting of 44 Local Government Areas. (KNARDA, 1995).

Yan Lemo fruits market is located in Kumbotso Local Government along Na'ibawa Zaria Road. Opposite Sa'adatu Rimi College of Education was selected for the study due high concentration of orange traders at retail and whole sale level in the market.

SAMPLING TECHNIQUE

Multistage sampling technique was used for sample selection in the study area. The first stage involve purposive selection of a major market notable for orange marketing which is ' Na'ibawa 'Yanlemu market. The second stage was based on random selection of 20% of the traders from the sample frame of 200 traders.

Analytical Tools.

Data for the study was analyzed using descriptive statistics, post-harvest loss estimation (PHLE) model. The descriptive statistics will be used to achieve objectives (i), (ii), and (iv).while PHLE model will be used to achieve objective (iii).

Descriptive Statistics.

Descriptive statistics is one of the simplest and most frequently used tools of analysis in most researchers (Edward, 1996). It is used to describe and summarize relatively large array of data into meaningful forms such that they could be easily interpreted (Babalola, et al, 2002). The descriptive statistics such as frequency counts, percentages, mean and standard error will be employed in describing the socio economic characteristics of the ORANGE marketers, identifying causes of post-harvest losses and strategies adopted to reduce the loss by the marketers.

Post-Harvest Loss Estimation (PHLE) Model

The total PHL at any post-harvest stage for a given commodity is the sum total of food losses occurring at each stage of the processes (Aulakh, Regmi, 2014 and Suleiman, Bada 2015), the PHLE Model is expressed as:

$$TPHL = \sum (\sum S_1 + \sum P_1 + \sum R_1 + \sum T_{1+})\ldots\ldots\ldots(1)$$

Where

TPHL = Total post-harvest losses (kg)

S_i = PHL during sorting (kg)

P_i = PHL during packaging (kg)

R_i = PHL during storage (kg) T_i = PHL during transportation (kg).

Table 1: gender, age, level of education, membership of association and trading experience of orange marketers.

Gender	frequency	percentages
Male	40	100
Female	0	0
Total	40	100
Age		

18-29	25	62.5
30-39	8	20
40-49	6	15
50-abv	1	2.5
Total	40	100
Educational qualification		
Primary	9	22.5
Secondary	19	47.5
Tertiary	6	15
Quaranic	6	15
Total	40	100
Membership of association		
Yes	27	92.5
No	3	7.5
Total	40	100
Trading experience		
1 -10 yrs	10	25
– 20	25	62.5
20 – abv	5	12.5

Source: field survey 2017.

Gender implies the categorization of human race or organism into male and female. The result from table 1, above reveals that all the orange sellers were (100%) male in the study area, this due to religion and socio-cultural background of the area, as a result women are involve in indoor activities okoh *et al*.,(2008). The age bracket 18-29years dominated the marketing with 62.5%, this shows that the orange marketers were within their active stage and thus should be able to execute their marketing function effectively. Education is important in the objective analysis of the problem, planning and implementation of decision and evaluation of business,. Adesina and kahinde (2008). The result on educational qualification indicates that 22.5%, 47.5%, 15% and 15% passed through primary, secondary, tertiary and quaranic education respectively. 92.5% of the respondent were members of cooperative society while 72.5% were non-members this implies that cooperative is beneficial to traders. Years of trading experience has profound influence on the managerial ability and decision making in marketing of agricultural commodities. 25%, 62.5%, and 12.5% has trading experience of between (1- 10yrs), (11-20yrs) and 21years above respectively.

Table 2: Causes of Post-Harvest Losses in Orange Marketing.

Causes of post-harvest loss	wholesalers		retailers	
	frequency	%	frequency	%
Poor transportation				
Yes	40	100	36	80
No	0	0	4	20
Total	40	100	40	100
Pest and diseases				
Yes	25	62.5	34	67
No	15	37.5	6	23
Total	40	100	40	100

Poor market patronage				
Yes	19	47.5	10	20
No	21	52.5	30	80
Total	40	100	40	100
Lack of PH management skill				
Yes	30	75	37	85
No	10	25	3	15
Total	40	100	40	100
Poor storage facility				
Yes	35	87.5	33	87
No	5	12.5	7	13
Total	40	100	40	100

Source; field survey 2017.

The result in table 2, indicates that Poor transportation is one of the causes post-harvest losses in orange marketing in both wholesale and retail marketing, 100% of the wholesale agreed that poor transportation facility causes post-harvest losses while 80% of retailers said yes to poor transportation been causes of post-harvest losses. 62.5% of the wholesale respondent and 67% of the retailers agreed that pest and diseases causes post-harvest losses in orange marketing while 37.5% of wholesalers and 33% of retailers do not agreed that pest and disease causes post-harvest lost.52.5% of the wholesalers and 80% of the retailers indicates that poor market patronage is not cause of post-harvest lost, this implies that there is market for orange. 75% of wholesalers and 85% of the retailers reveals that lack of post-harvest management skill was the causes of post-harvest losses while 25% wholesale and 15% retail said no, this result suggest that orange marketers need skills on post-harvest management. Poor storage facility constitutes one of the causes of post-harvest losses with wholesale 87.5% said yes while 12.5% did not agree. Likewise retailers with 87% agreed while 13% did not agreed, this result implies that poor storage is a problem to orange marketing.

Table 3: Determination of Quantity and Value of Post-Harvest Losses of Orange.

Actor	stages	qty (dozen)/50kg bag	value(N)
Wholesale			
	sorting	51	7650
	packaging	20	3000
	storage	78	11700
	transportation	60	9000
	total	209	31350
Retailers			
	sorting	36	7200
	packaging	12	2400
	storage	64	12800
	transportation	52	10400
	total	164	32800

Source; field survey 2017.

The result in table 3 reveals that at wholesale marketing of orange 51dosen were lost during sorting and at retail marketing 36 dozen were lost with values of N7650 and N 7200 respectively. During packaging 20 dozen were lost with value of N 3000, and at retail marketing 12 dozen were lost valued at N 2400. During storage78 and 64 dozen were lost during wholesale and retail marketing valued at N11700 and N12800 respectively. The studies indicates that 52 dozen valued at N10400 were lost during retail marketing and 60 dozen valued at N900 were lost during wholesales.

Table: 4 Problems of Orange Marketing.

Gender	frequency	percentages	Ranking
Poor handling	21	51.5%	1st
Pest and diseases	4	10%	4th
Lack of storage facility	8	20%	2nd
poor market patronage	1	2.5%	5th
Poor transportation facility	6	15%	3rd
Total	40	100%	

Source: field survey 2017.

The table above reveals that poor handling of orange constituted major problem of orange marketing with 51.5% of the respondent which ranks it the number one problem followed by lack of storage facility with 20% of the respondent, transportation of agricultural commodity especially perishables like orange need good facilities and road that is why transportation problem was rank 3rd out the problems with 15% of the respondent. Pest and disease do affect orange during marketing especially when there is no good storage facility as the study revealed. Poor storage facility was rank 4th with 10% of the respondent. Lack of market for orange was revealed to be the least problem of orange marketers.

CONCLUSION AND RECOMENDATION

The primary objective of the study is to analyze the level of post-harvest losses of orange in Yanlemo market in Kano state. the result in table 1, reveals that all the orange sellers were (100%) male in the study area, The age bracket 18-29years dominated the marketing with 62.5% , The result on educational qualification indicates that 22.5%, 47.5%, 15% and 15% passed through primary, secondary, tertiary and quaranic education respectively. 92.5% of the respondent were members of cooperative society while 7.5% were non-members. 25%, 62.5%, and 12.5% has trading experience of between (1- 10yrs), (11-20yrs) and 21years above respectively. the result in table 2, reveals that poor transportation facility, pest and disease, poor market patronage, lack of post-harvest management, and poor storage facility were all agreed by the respondent to be causes of post-harvest losses at both retail and whole sale level of marketing. The result in table 3 reveals that at wholesale marketing of orange 51dosen were lost during sorting and at retail marketing 36 dozen were lost with values of N7650 and N 7200 respectively. During packaging 20 dozen were lost with value of N 3000, and at retail marketing 12 dozen were lost valued at N 2400. During storage78 and 64 dozen

were lost during wholesale and retail marketing valued at N11700 and N12800 respectively. The studies indicates that 52 dozen valued at N10400 were lost during retail marketing and 60 dozen valued at N900 were lost during wholesales. The result in table 4 reveals that poor handling of orange, lack of good storage facility, poor transportation facility, pest and diseases poor market patronage were rank 1st 2nd 3rd 4th and 5th as problems of orange marketing respectively.

-Women should be encouraged to participate in orange marketing, educating orange traders should also go a long way in improving orange marketing.

- Provision of good storage, transportation facilities like refrigerator will go in reducing post-harvest lost in orange.

- Training of orange marketers on how to handle produce, good method of storage and control of pest and diseases will be of great importance.

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