

POST HARVEST MANAGEMENT OF FRUITS IN YANLEMU FRUIT MARKET, KANO

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Abstracts

The post harvest management/handling of some fruits were looked into in Yanlemu Market: a major fruit market in Kano state. A structure questionnaire was used to obtain information on the socio-economic characteristics, the methods of fruits handling system, Fruit storage system and its shelf life and Post harvest management of fruits in the study area. The study revealed that all the marketers were males, 52% had no formal education, and 71.43% of the respondents were mainly fruit marketers. Most of the respondents do sorting 88.10% while 12% doesn't. No storage facilities were used in the study area to preserve the fruits from rotten after harvesting as at the time of study. They either store fruits inside raffia baskets (46.43%), shops (33.33%), inside bags covered with jute bags (20.24%). All the fruit sellers do not add preservatives. 95.23% of the fruits sellers believed that their storage method is ineffective. All the respondents don't engage in value addition to fruits in the area of processing into juices, jams or dehydrated products. Most of the marketers claim that they do sell most of their produce within a week but In situations when there are no buyers, 38.10% said they sell it at a giveaway price, 14.28% give as gift to people, 26.19% still prefer to keep it with until it spoils while 21.43% consume it. The result indicates that all the identified factors have an impact on post harvest management. Given the threat of fruit loss and insecurity in the study area, it is suggested that training on post harvest handling be conducted, also adequate and effective storage structures be put in place to ease wastages

Keywords: Fruits, Marketers, Post-Harvest, Technology

Introduction

Fruits are generally high in fiber, water, vitamin C and sugars and which research indicates are required for proper long-term cellular health and disease prevention. Regular consumption of fruit is associated with reduced risks of cancer, cardiovascular disease (especially coronary heart disease), stroke, Alzheimer disease, cataracts, and some of the functional declines associated with aging [1].

In Nigeria, fruits in general have always been important traditional staple food for both rural and urban populace. They serve as a source of revenue to small holders who produce and market them [2]. Profit in commercial fruit and vegetable growing depends on proper harvesting, handling and marketing following good production practices [3]. There is optimal need for proper storage of perishable fruits to provide maximum availability due to their seasonal characteristics. Horticultural products are still alive after harvest and tend to deteriorate. The ultimate quality of the product for the consumer, which is what determines its real economic value, hinges upon its treatment after harvest [4].

Deterioration of fruits starts during the harvesting operations, because they are inherently perishable. The more carefully a product is handled, the slower the deterioration process during subsequent handling operations [5]. Handling procedures used in technologically advanced countries to reduce post harvest losses are not fully recognized and adopted in developing and under-developed countries [6]. To enhance adequate supplies of fruits, it is important that there be an efficient storage and marketing systems. Post harvest losses have been highlighted as one of the determinants of the food problem in most developing countries like Nigeria [7, 8]. The effect of post harvest losses reduces the effect of the efforts put into production and lowers marketing efficiency [9, 10].

In Agriculture, postharvest handling is the stage of crop production immediately following harvest. It includes storage, cleaning, packing, transportation and sorting [11]. The most important goals of postharvest handling are to keep the product cool, thereby avoiding moisture loss and slowing down undesirable chemical changes and to avoid physical damage such as bruising to delay spoilage. This in turn will help ensure increased food security as food security goes beyond food production to include distribution and marketing, adequate and stable supply, and accessibility to food.

In Nigeria, most of the common fruits such as oranges, banana, pineapple, are grown commercially in the Southern part because of the favourable climatic condition, loss in transit occurs—especially en route to northern markets, due to its physiological nature (high moisture content, high respiration rate and soft texture) which subjects it to microbial, mechanical and physiological damages [12] among other factors.

Usually, losses occur from poor storage conditions in the markets and poor packaging during transportation. Also, the loss level that occurs among retailers within the markets due to lack of appropriate storage facilities and post harvest handling is a dearth of data in this regard. In working towards postharvest wastages and losses, it becomes important to know the

effectiveness of post harvest management practices adopted by marketers, especially for developing countries like Nigeria, where standard storage, packaging, transporting and handling technologies are practically nonexistent for perishable crops like fruits [6]. It is against this background that this paper examines the post harvest management of some selected fruits in Yanlemu market, Kano

Methodology

Study area

This study utilized data that were collected from experienced fruits marketers in Yanlemu market, Naibawa area of Kano state. This market serves as the central disposing unit for fruits in Kano metropolis and beyond, as they are brought from different states all over Nigeria. Eighty four (84) retailers were randomly selected from the retailers that constitute the population operating in the market.

Data collection

This study employed the use of structured questionnaire designed in line with the objectives of the study and detailed, firsthand observation. From these respondents, the required data such as socio-economic profile, fruit storage system and its shelf life, post harvest management e.t.c.

Statistical Analysis

The tools of analysis used for this study is descriptive statistics. These involve the use of central tendency including the mean frequency distribution and percentages.

Results and discussion

Table 1: Socio-economic characteristics of fruit marketers

Sex	frequency	percentage
Male	100	100
Female	-	-
Age range		
20-30	8	09.52
30-40	18	21.43
40-50	34	40.48
50 & above	24	28.57
Occupation		
Farmer	-	-
Trader	60	71.43

Both	24	28.57
Level of education		
None	52	61.91
Primary	22	26.19
Secondary	8	09.52
Tertiary	2	02.38
Years of experience		
1-5 years	8	09.52
6-10 years	12	14.29
11-15 years	13	15.48
16-20 years	22	26.19
21 & above years	29	34.52

All the respondents (100%) were male, showing that only males are involved in the sale of fruits in the study area. This is not surprising at all as it is a known fact in Northern Nigeria, wives and female children are not exposed to activities that will make them leave their homes daily and they believe that females are not supposed to be doing difficult tasks, thereby re-validating the age-long dominance of males in marketing activities in northern Nigeria. Most of the marketers were between ages 20-49 which are the most active part of life and is a good supply of agile workforce in fruit marketing in the study area. Also, the findings indicate that relatively young men of this age range are physically and mentally alert and would be able to learn new concepts about improved indigenous post harvest management technologies of fruits. 71.43% of the respondents were mainly fruit marketers thereby indicating that all information obtained from them is a true reflection of their experience in the business. Most of the respondents (52%) had no formal education which from our observation is affecting most of their post harvest management practices. Education is an important variable that tends to influence adoption of modern technology in post harvest handling and marketing [13]. The respondent's level of experience shows that they are vast in the system and it was also observed that the years of experience tends to decrease with time indicating that the number of people joining the business is also decreasing, this can be attributed to the increase in westernization as youths tend to accept formal education rather than join the family business at tender age.

Table 2: The methods of fruits handling system

Type of Fruit	No of respondent	frequency
Mango	11	13.10
Orange	11	13.10
Coconut	12	14.29
Banana	13	15.48
Water melon	13	15.48
Pineapple	13	15.48
Pawpaw	11	13.10
Source of fruit		
Household garden	2	2.38
Purchase from merchants	50	59.52
Purchase from established plantation	30	35.72
Others	2	2.38
Stage of purchase/ harvest of fruits		
Fully ripe	12	14.29
Matured green	26	30.95
Half ripe	6	7.14
Mixed fruits	40	47.62
Sort and grading after purchase		
Yes	74	88.10
No	10	11.90

From Table 2, it can be seen that the respondents sell all kinds of fruits which enabled us get more information on the postharvest management of most of the fruits sold in Kano State. Kano is not a major fruit producing state so most of the fruits are brought from either the southern or western part of Nigeria where there are established plantations (35.72%) and merchants (59.52%). 47.62% of the respondents purchased mixed fruits while 14.29% at fully ripe stage. Stage of purchase actually depends on the type of fruit. Information obtained from the respondents confirmed that most of the fruits are harvested at matured or half ripe stage and during transit it ripens which accounts for the mixed state of ripening as observed. Harvesting fruits at matured green stage is always known to extend their shelf life and thereby encouraging marketing at later stage. Most of the respondents do sorting 88.10% while 12% doesn't. Sorting is often combined with grading, but in some applications both phases are separated from each other and the sorting phase is only for removing produce with surface deformities or blemishes and foreign / unwanted objects which can affect other fruits.

Table 3: Fruit storage system and its shelf life

Fruit storage	Respondent	frequency
Yes	70	83.33
No	14	16.67
Methods of fruit storage		
Inside raffia baskets	39	46.43
Shops	28	33.33
Inside bags and covered with jute bags	17	20.24
Addition of preservatives		
Yes	-	
No	84	100
Shelf life of stored fruits		
1-3 days	42	50.00
4-6 days	36	42.86
7-9 days	6	07.14
10-12 days	0	0
13-15 days	0	0
Effectiveness of storage method as declared by respondents		
No	80	95.23
Yes	4	04.77

83.33% of respondents declared that they store fruits immediately after purchase and also the unsold ones. Their method of fruit storage is however primitive and ancient as they either store inside raffia baskets (46.43%), shops (33.33%), inside bags covered with jute bags (20.24%).

This justifies the short shelf life of between 1-6 days which most of the fruit sellers experience. All the fruit sellers do not add preservatives to extend the shelf life as they believed that it causes shrinkage of fruits after few days thereby reducing the market value. 95.23% of the fruits sellers believed that their storage method is ineffective as most of their produces are either bruised because of the constructing material or affected by heat which encourages deterioration. Most fruits preservation processes are only effective by employing a low temperature chain from the field to the fork. Low temperature storage with high humidity and high concentration of solutes delay the loss of nutrients and obstruct microbial growth [14].

Table 4: Post harvest management of fruits

	Frequency	Percentage
Yes	46	54.76
No	38	45.24
Treatment of pest infestation		
Use of Otapiapia	6	7.14
Unnamed chemical	36	42.86
Traps	4	04.76
Display of fruits		
Under shade	32	38.10
In the sun	52	61.90
Engagement in any primary processing of fruits		
Yes	84	100
No	0	0
What do you do with your produce when there are no buyers for a while?		
Process	0	0
Consume	18	21.43
Store for longer days	22	26.19
Sell it at a giveaway price	32	38.10
Give as gift	12	14.28
Awareness of respondents to technologies that can store your fruits for a longer time		
Yes	50	59.52
No	34	40.48
Reasons for not adopting the technology		
Too expensive	20	40
Don't know where to get it	12	24
Don't believe it	8	16
Can't change my long time practice	10	20
Willingness of respondent to adopt such technology		
Yes	35	41.67
Yes, if cheap	22	26.19
Yes, if free	19	22.61
No	8	9.53

54.76% of the respondents disclosed the infestation of pest especially rats and they either use otapiapia (Gamalin) or traps while 42% refused to name the chemical used, claiming that it was purchased from a hawker. Pest infestations in places where fruits are kept either stores or in open field covered with jute bags not only destroy them but it reduces the market value and introduces diseases which can cause harm when consumed. 61% of the fruit marketers displayed their produce under sun believing that it is the best means of attracting buyers. Keeping fruits under sun usually increase the quantity of damaged fruits due to softening possibly by the breakdown of carbohydrates during fruit ripening. Several reports have also

associated fruit softening with enzymatic degradation of carbohydrates and cell wall components are due to high temperatures [15].

All the respondents don't engage in value addition to fruits in the area of processing into juices, jams or dehydrated products. The reason for their lack of preservation knowledge of adequate methods could be as a result of lack of awareness by the extension workers or the marketers on various ways by which they can go about preserving their produce. Most of the marketers claim that they do sell most of their produce within a week but In situations when there are no buyers, 38.10% said they sell it at a giveaway price, 14.28% give as gift to people, 26.19% still prefer to keep it with until it spoils while 21.43% consume it. Unlike durable crops such as cereals, pulses and oilseeds, fresh fruits and vegetables are highly perishable, and must be marketed immediately after harvesting without primary processing. Fruits, when not sold or properly preserved generate large quantities of valuable waste that ends up as garbage. In terms of awareness of the marketers to technologies that can extend the shelf of fruits, 59.52% claimed they are aware while 40.48% are not. 40% of those aware claimed that, most of the technologies are expensive, 24% doesn't know where to get them, 16% said though they have heard about they don't believe it works while 20% insisted that they can't change the long time practice which was inherited from their forefathers. 41.67% were willing to accept the technology either not free or cheap to ease the problem of looking for buyers and to minimize wastages and reduction in their income, 26.19% were willing to adopt if cheap, 22.61% when given free and 9.53% were completely unwilling to adopt the modern technology.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made to reduce the post harvest losses thereby increasing food security and the standard of living of the Yanlemu fruit marketers, Local Government Area of Kano State.

1. There should be good storage facilities which can keep produce for a longer period of time for example the Nigerian Stored Produce Research Institute Evaporative Cooling system (E.C.S) which can store fruits for at least two weeks.
2. Training initiatives on post harvest handling of perishable products should be encouraged and follow ups, feedback and adoption measurement should be conducted periodically for sustainability.
3. Establishment of cottage industries for adding value to fruits should be encouraged

CONCLUSION

This study has looked into the post harvest management of fruits among marketers in Yanlemu fruit market in Kano state. The result indicates that all the identified factors have an impact on post harvest management. Therefore, there is a great need to improve upon some of the existing methods and to completely abolish some age long practices. Losses incurred by the marketers are mainly attributable to poor storage system, storage period, poor handling, and perishability nature of most if not all fruits. It could be inferred that the problem of infrastructures; when improved upon could also be of benefit in the enhancement of the structure, conduct and performance of the fruit market. Furthermore, when storage structures are put in place, it will encourage most of the marketers to buy in large quantity for long time storage.

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