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Effectiveness and availability of packaging materials for fruits and vegetables: A case study of Ido local government, Ibadan, Oyo State, Nigeria

Aremu D. O.[1], Ogunlowo Q. O.[1], Azeez A. A.[1], Babajide N. A.[2] and Ogunlade C. A.[3]

[1]*Department of Agricultural Engineering, Federal College of Agriculture, Moor plantation, Ibadan*
[2]*National Rice/Maize Center, c/o Federal Dept. of Agric., Moor Plantation, Ibadan*
[3]*Department of Agricultural& Environmental Engineering, University of Ibadan, Nigeria*

ABSTRACT

Packaging is a very important post-harvest operation that determines the longevity of farm produce. Packaging materials contribute a significant cost to food producing industry. The objectives of the study include assessment of packaging materials for fruits and vegetables and evaluation of the effectiveness of the packaging materials. A case study of Ido local government, one of the 33 local governments in Oyo state with 986km square area and a population of 103,261 was carried out. Data were collected for this study with the aid of well structured questionnaire. The targeted population for this study were fruits and vegetable sellers in the local government area. Simple random techniques were used to select fifty respondents from the study area where the questionnaire is been administered. Both descriptive and inferential statistical tools were used to analyze the data obtained in this study. The statistical tools used in the analysis include SPSS, frequency tables, cross tabulation and chi-square. The results showed that females are mostly involved in the selling of fruits and vegetables, 42% respondents uses basket, 42% uses Asian sack and 16% uses jute bag as packaging material for their fruits and vegetables. The study also shows that basket, jute bag, and asian sack are very effective and readily available and can be used for the packaging of fruits and vegetables in Ido local government.

Keywords: packaging materials, Ido local government, basket, jute bag, Asian sack, fruit and vegetables

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INTRODUCTION

Fruit is part of a flowering plant derived from specific tissues of flower, one or more ovaries, and in some cases accessory tissues. Fruits are the means by which these plants disseminate seeds. Fruit can be described as the fleshy seed-associated structures of a plant that are sweet or sour and edible in the raw state such as apples, oranges, grapes, strawberries, bananas and lemons. Vegetable is an edible plant or its part, intended for cooking or eating raw. The non- biological definition of a vegetable is largely based on culinary and cultural tradition. Vegetables are most often consumed as salads or cooked in savory or salty dishes, while culinary fruits are usually sweet and used for deserts (Ayeni, 1997, Larkcorrn, 2002, McGee, 2004).

Packaging of fruits and vegetables

Packaging of fresh fruits and vegetables is one of the most important steps in the long and complicated journey, from grower to consumers. Packing and packaging materials contribute a significant cost to the produce industry; therefore it is important that packers, shippers, buyers, and consumers have a clear understanding of the wide range of packaging options available. It plays a vital role in terms of protection, storage and hygienic handling of a product and also a key role in marketing mix. Packaging is often regarded as the most important form of advertising at the most critical point of all in the purchasing journey i.e. the point of purchase. There are different types of packages used for produce and the number continues to increase as the industry introduces new packaging materials and concepts (Raji, 2007). A significant percentage of produce buyer and consumer complaints may be traced to container failure because of poor design or inappropriate selection and use. A properly designed produce container

should contain, protect, and identify the produce, satisfying everyone from grower to consumer. Example of packaging materials commonly used include sack, baskets, jute bag, plastic, metal, glass, cardboard, brick carton (Raji, 2007).

Fruit and vegetables production faces multiple challenges across the value chain from the supply to demand side. Productivity of most domestic fruit and vegetable crops is low compared to international standard; there is a wide gap between existing and potential yields. This can be narrowed through improved varieties and technologies. Some areas of concern are water management, quality fruit development, pest and diseases management and technology suitability for small and marginal land holdings some other contributors includes slow development of post harvest technologies and their dissemination (Olorunda, 1987). The selection of packaging material for a particular agricultural product depends on both its technical suitability and the method used in selling the fruits and vegetables. Adequate packaging and good system of packing fruits and vegetables will reduce the rate at which fruits and vegetables deteriorate. There is an urgent need for production and post-production management, international quality compliance and marketing strategies for development of fruits and vegetables for export market. The objective of this study is to assess some of the packaging materials for fruits and vegetables and evaluate the effectiveness and reliability of the packaging materials.

MATERIALS AND METHODS

Study Area and Sampling: the research was carried out at Ido local government area within Ibadan metropolis, Oyo state, Nigeria. The local government has an area of 986 km^2 square and a population of 103,261 at the 2006 census. Fifty (50) questionnaires were administered at *Omi adio* and *Apata*; the major markets in Ido local government. The targeted populations for this study were fruits and vegetable sellers in the local government.

Sources of data: both primary and secondary data were used for this study. The primary data were gathered from the responses of the respondents in the study area through interview using a structured questionnaire during the field survey. Secondary data were obtained from literature, journals, textbooks, periodicals, internet and informal discussion with the respondents. Major information gathered include sex of the fruit seller, age, marital status, level of education, occupation, types of fruits and vegetables sold, years of selling, packaging materials, availability of the packaging materials, effectiveness of the packaging materials, provision for alternatives of packaging materials.

Data Analysis: descriptive and inferential statistical tools were used to analyze the data obtained in this study. The descriptive statistical tool used includes the use of tables, frequency distribution and percentages.

Measurement of variables

(i) Age: measured in group of years as 20-29, 30-39, 40-49, 50 and above.
(ii) Sex: measured at nominal level and scored as male=1, and female=2.
(iii) Marital status: scored as single=1, married=2 and divorced=3.
(iv) Educational status: indicated the level of respondents education; measured as no formal education=1, adult education=2, primary education=3, secondary education=4, grade II,OND, NCE=5, HND & BSc=6, and others=7.
(v) Occupation: indicated the job in which the respondents are doing and scored as farmer=1, teacher=2, transporter=3, and others=4.
(vi) Types of fruits and vegetables sold
(vii) Years of experience: measured at interval level and scored as 1-3years=1, 4-6years=2, 7-9years=3, and 10years above=4.
(viii) Packaging materials: indicated the type of materials used for the packaging of fruits and vegetables sold by the respondent and scored as basket=1, asian sack=2, amd jute bag=3.
(ix) Source of products: this indicates whether the fruits and vegetables were been bought from the farmer and scored as yes=1, no=2, and others=3.
(x) Quantity of product: indicated the quantities of fruits and vegetables bought from the farmer and scored as 1-10=1, 11-20=2, 21-30=3, and 31 above=4.
(xi) Condition of product: indicated if the fruits and vegetables get damaged after been brought to the market and scored as yes=1, and no=2.
(xii) Effectiveness of the packaging material: indicated how effective the packaging material is and scored as very effective=1 and not effective=2.
(xiii) Availability of packaging materials: indicated if the packaging material is readily available and scored as yes=1, and no=2.
(xiv) Accessibility of fruits and vegetables packaged: measured at nominal level as very good=1, good=2, fair=3 and bad=4.

RESULTS AND DISSCUSSION

Data obtained from this research work showed that the population of female selling fruits and vegetables is greater than that of male in the local government (48% male and 52% female) while 62% are married, 28% single and 8% are divorced. 40% respondents has no formal education, 2% has adult, 24% has primary, 12% has secondary education, 145 has Grade II, OND, NCE while 8% has HND and degree education. 4% respondents are teachers, 80% traders, 8% transport workers, 4% civil servants, 2% farmers and other occupation covers 2% of the respondents. Figure 1 shows the age distribution of the respondents while Figure 2 shows frequency distribution of packaging materials used by fruit and vegetable sellers in Ido local government of Oyo State, Nigeria.

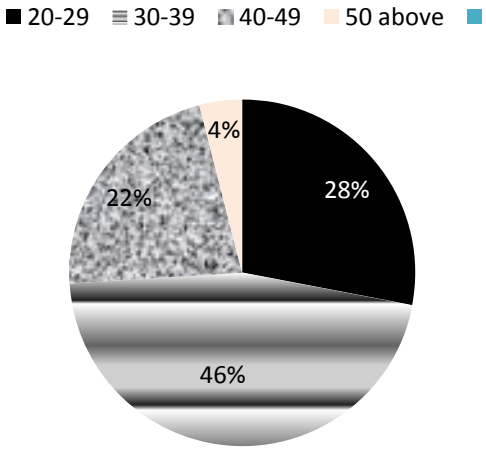

Figure 1: Age distribution of the respondents

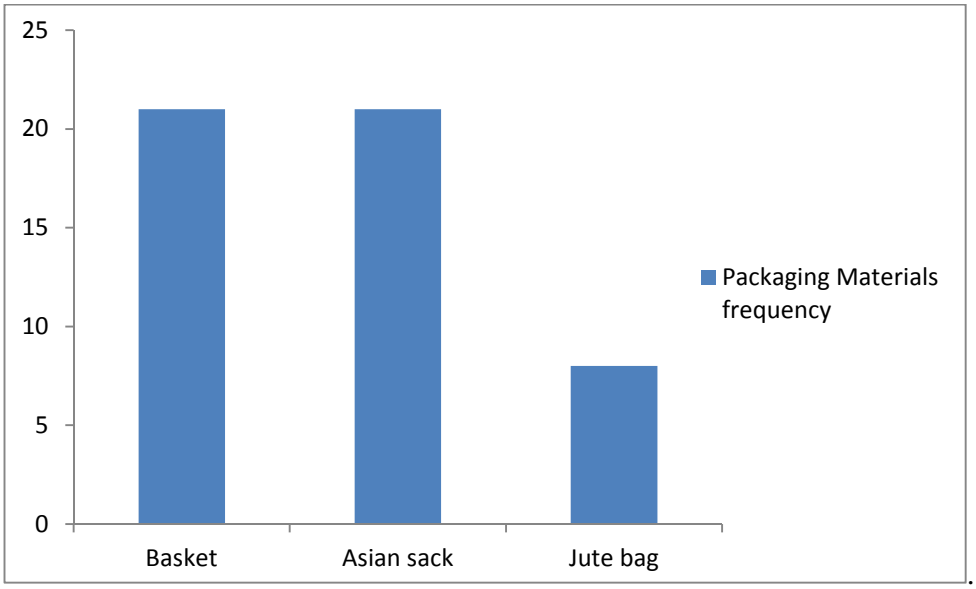

Figure 2: Frequency of packaging materials used

Availability and Effectiveness of Packaging Materials

It was obtained that 90% of fruit sellers in Ido local government area make use of readily available packaging materials mainly baskets, Asian sack and jute bags while 4% of the respondents indicated that the packaging materials are not readily available. The use of jute bag is highly significant, followed by the use of Asian sack and basket. The result also showed that jute bag, Asian sack, basket can be recommended for the packaging of fruits and vegetables. The level of effectiveness of the packaging materials is presented in Table 1.

Table 1: Effectiveness of packaging material (Basket)

Packaging materials	Basket			Jute bag			Asian sack		
	V. E.	*N. E.*	*Total*	*V. E.*	*N. E.*	*Total*	*V. E.*	*N. E.*	*Total*
	18.00	3.00	21.00	3.00	4.00	7.00	1.00	6.00	7.00
TOTAL	1.00	1.00	2.00	1.00	1.00	2.00	19.00	2.00	21.00
	2.00	0.00	2.00	7.00	1.00	8.00	2.00	0.00	2.00
	21.00	4.00	25.00	11.00	6.00	17.00	22.00	8.00	30.00

V. E. symbolises Very Effective, N. E. symbolises Not Effective

Basket is very effective for the packing of fruits and vegetables in Ido local government. Very small quantity of fruits and vegetables packed in the basket thus not get damaged. It also makes the product attractive to the sight of the consumer which serves as a means of advertisement and thus enhances sales. 8 respondents uses jute bag for the packaging of fruits and vegetables whereas a minimal number of respondents uses Asian sack for the sale of fruits and vegetables in the market. However, packaging materials should be kept away from weather exposure which reduces the life span and effectiveness of the packaging materials, the chemical composition used in the production of the packaging materials like Asian sack, jute bag should be minimal in order not to affect the nutritional component of the fruits and vegetables (Cantwell, 2001). Also, physical and biological properties of material to be packaged should be considered before a packaging material is selected to ensure the reliability and durability of the packaging materials.

CONCLUSION

The result of this survey revealed that both male and female are involved in the selling of fruits and vegetables. Level of education of the respondents varies from no formal education, adult education, primary school, secondary school, and tertiary education. The study revealed that majority of the respondents are traders and they fall within the age range of 30-39 years. The major packaging materials used in the study area includes basket, Asian sack and jute bag.

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