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POST HARVEST HANDLING AND TRANSPORTATION OF PAWPAW (*Carica papaya*) IN EKITI STATE, SOUTHWESTERN NIGERIA.

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ABSTRACT

The method of post harvest handling and transportation of pawpaw was conducted in Ekiti State, Southwestern Nigeria. Questionnaires schedule and personal interviews were used to collect data from ten Local Government Areas in the state. Seventy seven structured questionnaires were administered to both whole sellers and retailers within the state. The study identified quite a number of lapses in the post harvest handling and transportation of pawpaw in Ekiti State where the handlers single out storage, loading, transportation system and marketing as the most important factors that contribute to the high post harvest loss of pawpaw fruits in Ekiti State. Recommendations on how to improve the handling, transportation system, storage as well as marketability to reduce the high post harvest loss are made.

KEYWORDS: Pawpaw, Ekiti State, Handling, Post harvest, Storage.

INTRODUCTION

Fruits and vegetables are in great demand as they form part of the diet of millions of people in the world (Idah *et al.*, 2007). Pawpaw fruits (*Carica papaya L.*) is the most economically important fruit in the Caricaceae family (Medinal *et al.*, 2010). The fruit is one of the most nutritional and cheapest fruit grown and consumed in Nigeria (Baiyewu and Amusa, 2005). The ripe fruit of papaya is usually eaten raw with or without skin or seeds while the unripe green fruits can be eaten cooked, usually in curries or salads. According to (Tietze, 2002), a mature green papaya fruit contains more vitamin A than carrots, more vitamin C than oranges and abundant vitamin B factors and vitamin E.

Losses as high as 50% are common in fruits and vegetables and these losses occur due to biological, chemical, physiological as well as mechanical factors (Kader, 1992). Other reasons according to (Fallik and Ahorani, 2004) are related to inadequate harvesting, handling and transportation. According to (Dandago, 2010) increase emphasis should be placed on conservation after harvesting rather than endeavoring to further boost crop production as this appear to offer better return for available resources of labour, energy and capital. To increase the effectiveness of conservation measures, more must be known about the nature and causes of losses between harvest and consumption (Wills *et al.*, 1989). The objective of this study was to evaluate the post harvest handling and transportation of pawpaw fruits in Ekiti State, Southwestern Nigeria and proffer solutions on how to minimize losses due storage, transportation and handling.

MATERIALS AND METHODS

The study was conducted in Ekiti State located in Southwestern part of Nigeria. The State lies between latitude $7^{\circ} 30'$ and $8^{\circ} 15'$ north of the equator and longitude $4^{\circ} 47'$ and $5^{\circ} 40'$ of the Greenwich meridian (Adebayo, 1993). The estimated population figure of Ekiti State released by National Population Commission (NPC) stood at 2,535,082 (NPC, 2007). Ekiti State is predominantly an agricultural state with about 70% of the inhabitants employed by the agricultural sector of the economy (Akinbode, 2002).

A simple random sampling method was used to select the respondents for this study. This method of sampling was used to get a true representative of pawpaw fruits traders and handlers in the study area. The eight (8) contacted pawpaw traders and handlers were randomly selected from ten (10) local government areas in Ekiti State which were Ekiti West, Ekiti East, Ilejemeje, Ado, Ikere, Ikole, Ido-Osi, Ise-Orun, Moba and Oye local government respectively with a total number of 80 interviewers. Questionnaire schedules and personal interviews were used to collect data. The questions were translated into Yoruba Language as most of the respondents could not read English language. However, 77 respondents were successfully interviewed and

reported in this study. all the information generated from the respondents and personal observations were immediately recorded and data analyzed using simple percentages.

RESULTS AND DISCUSSION

The study revealed that 97% of the pawpaw marketers in Ekiti State were female and only 3% were male. All the male marketers were from Northern part the Nation. The educational level of the traders vary as 6.38% have tertiary education, 44.85% have secondary education, 32.46% have primary education and 16.28% have non formal education. Despite the low level of western education, it was observed that majority of those people in pawpaw business can predict the time of fruits scarcity and surplus, and also perform simple arithmetic tasks. It was also observed that about 13% of the respondents were in the business for less than a year, 24% for 1-5 years, 23% for 6-10 years, 16 % for 11-15 years and 14% for 16-20 years and 10% above 20 years. The years of experience of the marketers in the business might have assisted them to predict the time of fruits surplus and scarcity, and also performed simple arithmetic because it was observed that those with more numbers of years of experience understood all these than the beginners.

Over 50% of the fruits and vegetables transaction in Ekiti State was carried out at Oja-Oba market in Ado-Ekiti, the capital of Ekiti State, 14% in Ojudo market in ido-Ekiti, 8% in Eleyoo market in Ikole-Ekiti and 28% in other markets in the study area. The study revealed that all the pawpaw traders and handlers also deal in other fruits. Ekiti State is the major source of pawpaw fruits trade in the state as indicated by 84% of the respondents and 16% indicated that the Ekiti State and neighbouring states are their source of fruits trade in the state.

Informal interview revealed that the production systems comprise intercropping with fruits and vegetables in homestead garden and mixtures with food and tree crops in outlying fields while some are grown in the wild. The study revealed that commercial transport used for transporting pawpaw fruits from farm to the far away market vary widely in the study area, some uses commercial taxis, commercial buses, canter but these commercial transport are not reliable and sometimes not even available to transport the fruits to the market as a result of the rural feeder roads that are not well maintained and seasonal. As a result of this, the farmers and traders are compelled to transport the fruits with commercial motorcycle popularly called "Okada" in the study.

The harvested pawpaw fruits are packed into large open basket or fibre bags are often piled on top of one another on commercial motorcycle during transportation, fruits arrived at their destination bruised and squeezed. Bruised fruits readily results to increase rate of physiological deterioration, spoilage and become colonized by propagules of the pathogens from already or partially rotted fruits. According to the respondents, some pawpaw fruits are stored under a partial covered shade that make it to exposed to all climatic factors such as rain, sunlight and some are kept inside fibre or polypropylene bags where there is poor ventilation for days. These could be the reasons why the pawpaw fruits in the study area have short shelf life, faster rate of deterioration and high post harvest loss.

The study revealed that 98% of those in pawpaw business do not have any form of storage facilities during marketing. They normally leave their produce in open shade constructed with wood and raffia palm leaves after the day's business inside an open basket or inside jute or fibre bag(s) or spread it on the floor and cover it with jute bag or polypropylene bag at the place of market. Transportation and storage activities as indicated by 84% of the respondent are the major causes of post harvest loss of pawpaw fruits in Ekiti State followed by marketing with 10%. Poor loading during transportation creates wounds and bruises on the pawpaw fruits and in the absence of good storage structure will certainly lead to high post harvest losses.

CONCLUDING REMARKS

This study indicated that transportation, loading, storage etc. all contributes to the high post harvest loss of pawpaw fruits in Ekiti State. Pawpaw traders and handlers have also single out marketing as the major factor that contributes to high post harvest loss. It was also observed that changes in physiological state of the fruits as a result of extreme temperature and injury during and after harvesting, and transportation are the major factors that predispose pawpaw fruits to deterioration and spoilage. Traders and handlers in Ekiti State devised some simple means of harvesting and loading their produce because they understood the relationship between bruises on the fruits and rate of physiological deterioration and spoilage.

Base on the results and observations made during the study, it is recommended that there is need for fruits and vegetables traders and handlers to forms cooperatives, as a cooperative society, government will response to

their request as a body. Traders and handlers should be taught how to minimize physical damage on the fruits during harvesting, handling, transportation, storage and marketing to reduce the rate of physiological deterioration and spoilage. They should also be taught simple post harvest handling and storage techniques. There is also a need for government to provide storage facilities and also make farm credit accessible to the traders at a low interest rate to acquire storage facilities and other handling equipments.

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