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EVALUATION OF FARMERS' KNOWLEDGE ON POST-HARVEST TECHNOLOGIES OF
SOME SELECTED CROPS IN NORTH CENTRAL, NIGERIA

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technologies are vital for several reasons. It is a major contributor to income and standard of living of farmers. This position paper is aimed at evaluation of farmers' knowledge on post-harvest technology of selected crop and challenges of post-harvest technologies in Nigeria. The position paper revealed that one major problem of food security in Nigeria is improper and inadequate knowledge on post-harvest technologies, which has resulted to 20-30% loss of agricultural produce annually and also hindered farmers making more income and improved livelihood. It was stressed that increase in farmers' knowledge on post-harvest technologies will enhance their income and livelihood. This could also make food cheap and available to consumers in the market thereby enhancing economic growth and development. The review revealed that improvement in farmers' knowledge on post-harvest technologies is the only solution to post-harvest losses in North Central Nigeria. It is recommended that attempts should be made by Agricultural extension agencies to arrange training, motivational campaigning and provide post-harvest technologies guide for increasing post-harvest knowledge of farmers. Also, it is recommended that action should be taken to provide technical support to the farmers to minimize their problems in cultivation, harvesting, post-harvesting and marketing.

Keywords: Postharvest technology, Farmers' knowledge, Economic growth, Loss of agricultural produce

INTRODUCTION

Post-harvest can be defined as the stage of crop production immediately after harvesting. It involves stages such as drying, shelling, cleaning, sorting and packing (Vellema, 2008). Post-harvest technologies on the other hand can be defined as an interdisciplinary science and methods applied to agricultural products after harvesting for the purpose of preservation, conservation, quality control/enhancement, processing, packaging, storage, distribution, marketing, and utilization to meet the food and nutritional requirements of consumers in relation to their needs. The roles of post-harvest technology in agricultural production cannot be over-emphasized, post-harvest technology enhance agricultural production by reducing postharvest losses to the barest minimum, improves nutrition, adds value to agricultural products by opening new marketing opportunities, generating new jobs and enhance other related economic sectors for viable growth. However, the major problem of food security in Nigeria is improper and inadequate knowledge on post-harvest technologies, which has resulted to 20-30% loss particularly this occurs as a result of postharvest pests, this scenario most time force farmers' to sell their farm produce immediately after harvesting, only for them to buy it back at an exorbitant price in few months after harvesting. The potential increase in income

and greater livelihood security will not be achieved if farmers' always sell surplus at the point of production (Saran et al., position paper evaluate farmers' knowledge on post-harvest technologies of some selected crops.

Objectives of the study are to;

1. Evaluate farmers' knowledge on postharvest technology of some selected crops
2. Examine the challenges of post-harvest technologies in Nigeria Evaluation of farmers' knowledge on postharvest technology of some selected crops

The research conducted by (Karnataka, 2006) on the knowledge of the tomato growers about improved production and practices indicated that nearly half the number of growers (49.14%) had medium level of knowledge on post-harvest technologies of tomatoes while only 27.50% had high knowledge on post-harvest technologies of tomato production. Tomato being a remunerative crop said by the author. He further stressed that farmers should possess complete knowledge of tomato production to get increased yields. Their knowledge regarding mechanical sorting and scientific grading by using recommended size and weight was very poor according to the author. The author stated that farmers packed their produce in big bamboo baskets. The processing of tomato was known to only 55% farmers. The author revealed that farmers were ignorant of appropriate post-harvest technology. It is of the opinion that adequate and proper understanding of post-harvest technologies will benefit the farmers'.

Findings from Javed (2013) on the knowledge of farmers in post-harvest handling of vegetable revealed that



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56% of the respondents felt in medium knowledge category followed by 35.8% in high knowledge category and only 8.3% in low knowledge category. The author considered Knowledge as vision of an explanation in any aspect of the situation regarding vegetable cultivation in the research work. The findings according to the author revealed that farmers most of the farmers' had moderate knowledge and not so good for handling of post-harvest technologies. Muhammad et al. (2012) on the assessment of the post-harvest knowledge of fruits and vegetable farmers in Garun Mallam L.G.A of Kano, Nigeria, showed that there is complete lack of proper postharvest knowledge among the farmers, as only 10% of the respondents were found to harvest at an appropriate time of harvesting i.e. morning and evening. This findings is not that good to compel the menace of post-harvest losses in the study area.

Also observed from the result was that majority (95%) of the farmers harvest when it is fully ripe and only 5% harvest when half ripe. Some fruits and vegetables like tomatoes are best harvested when fully matured and still in the green stage, matured tomatoes stays longer as they ripen gradually while tomatoes that are already ripe will have a short storage life. The author further stressed that the losses recorded among the farmers was due to lack of proper knowledge and the use of local baskets in packaging of their produce after harvest, the basket are rough and easily bruises the produce and poorly ventilated, hence rot sets in.

Mande et al. (2007) on the Knowledge level of farm women about post-harvest technology reveals that almost all farmwomen possessed either high or low knowledge. The author indicated that (42.7%) have low knowledge. 86% of farmwomen possessed low knowledge about safe storage methods followed by practices. Also, control measures for storage pests (80.7%) storage pests and their nature of damage (80.0%), drying period for safe storage (67.3%), low cost storage structures (66.6%), making of processed products of fruits and vegetable (59.3%) and modern machinery for harvesting (54.0%). The researcher concluded that majority of farm women possessed low knowledge in these areas. The outcome of this findings is not that good since majorities possessed low knowledge which should have been high knowledge in order to curtail post-harvest lossess. The post-harvest technologies to be effective farmers must posses high knowledge. The research carried out by Javed (2013) and Karnataka (2006) revealed that most of the farmers possessed moderate knowledge about post-harvest technologies which indeed should not have been so. Effort should be put in place for farmers knowledge to be revitalized.

Challenges of post-harvest technologies in Nigeria

Pan et al. (2008) stressed that the agricultural value chain comprises production, harvest, technologies and storage, processing, distribution and, finally, consumption.

Food loss occurs all along this chain but is most acute between harvest and distribution. In developing countries, the root causes of food loss are interlinked and complex, but the primary drivers include: lack of extension services to build skills in technologies, packaging, and storage; insufficient post-harvest storage facilities or on-farm storage technologies; and poor market access. Research and interventions in developing countries have largely focused on technology-based approaches that look for solutions to specific food loss problems at single points in the value chain for example, on-farm storage in hermetically sealed bags, fruit and vegetable refrigeration through solar powered coolers, and mobile drying systems for grain. Transportation challenge

Transportation challenge because transport facilities are grossly inadequate, especially in the rural areas who are the major producers of food. Motorable roads are lacking and where available, they are not motorable throughout the year or are laced with potholes, which make it difficult for vehicles to get to the farm sites and convey farm produce to the markets. The bad roads have increased post-harvest losses through damage to farm produce (Labaris et al., 2014).

Inadequate infrastructures

Inadequate infrastructures is another problem that affects post-harvest technologies in Nigeria. Infrastructures such as storage and warehousing are lacking in most part of the country. Insufficient storage facilities often lead to produce loss due to premature germination, fungal and bacterial attack, insects and rodents attack. This often led to increase marketing cost leading to higher retail prices and reduce marketing efficiency. Infrastructure in this instance is construed to include physical infrastructure, such as roads and railway system, educational and health facilities, social services such as potable water and electricity and communication system. (Caswell et al., 2010). Agricultural performance in Nigeria is greatly impaired by the low level of development of infrastructure.

Market information

Market information is also lacking. Sellers and buyers are not well informed about the sources of food supply and thereby reducing potential efficiency in the market. Other facilities such as clean environment, communication facilities, health facilities, fire services, banking facilities, security facilities,



water supply and good toilets are also lacking in most markets (Rico et al., 2007). Shortage of funds

Adequate fund is required in the area of bulk purchases, development of storage facilities, transport and processing facilities. Sometimes prospective food marketers are often discouraged because of shortage of funds (Lu et al., 2010) Shortage of processing facilities

Absence of these facilities sometimes compel farmers to sell perishable crops such as fruits, tomatoes, orange, pineapple and bananas at low prices immediately after harvest to avoid postharvest losses. This depresses the income of farmers, reducing their purchasing power and a result of food insecurity. The lack of adequate storage and processing facilities accounts for divergence between national food security and household food security. Even if the total production of food seems adequate at the aggregate level, it will not lead to significant improvement in food security unless the food is available for consumption at the right time and in the right form. Whereas food must be consumed on a daily basis, production has a different specific time profile. Storage and processing are critical in ensuring that the commodities produced at a particular period are available for consumption whenever and wherever they are required (Mbuk et al., 2011). A significant quantity of products harvested in Nigeria perishes due to lack of storage and processing facilities. Simple, efficient, and cost-effective technologies for perishables, such as roots, tubers, fruits and vegetables, are not as highly developed in the country compared to the storage technologies for cereal grains and legumes. Consequently, post-harvest food storage losses are very high, approximately 40 per cent for perishables, compared to cereal grains and pulses at about 15 per cent. Traditional storage facilities have certain deficiencies, including a low elevated base giving easy access to rodents, wooden floors that termites could attack, weak supporting structures that are not moisture-proof, and inadequate loading and unloading facilities (Mbuk et al., 2011).

CONCLUSION

Post-harvest losses have been serious issues affecting agricultural production in North Central Nigeria. This scenario has not only negated the livelihood but also hampered economic development. However, for the menace of postharvest losses to be controlled to the barest minimum, farmers must possess adequate knowledge on post-harvest technologies of agricultural produce. Also, there is need to motivate farmers so that they can adopt modern post-harvest technologies of crops in order to minimize the post-harvest losses. Lastly, it is vital for farmers to use traditional post-harvest technologies in order to reduce post-harvest losses and also enhance food security.

REFERENCES

Caswell, M., Fuglie, K.O., Ingram, C., Jans, S. and

- Kascak, C. (2010) Adoption of agricultural production practices: lessons learned from the US Department of Agriculture Area Studies Project. E.R.S: USDA.
- Hill, J. E., Williams, J.P., Mutters, R. G. and Greer C. A. (2006). The California rice cropping system: Agronomic and natural resource issues for long-term sustainability. *Paddy Water Environment*, 4, 13–9
- Javed, M. D. (2013). Farmers' Knowledge on Postharvest Practices Of Vegetables, thesis submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Extension and Information System, Bangladesh. Pp. 1121
- Kormawa, P., Akoroda, M. O. (2013). Cassava supply chain arrangement for industrial utilization in Nigeria. Ibadan: IITA.
- Labaris, A, K. S., Yusuf, K. S., Medugu, N. I. and Barde, M. M. (2014). Problems of Guinea Corn Marketing In Nasarawa A State, Nigeria, *International Journal of Science, Environment and Technology*, 1790 – 1796
- Lu, J. Charles, M. T., Vigneault, C., Goyette, B. and Raghavan, G. S. V. (2010) "Effect of heat treatment uniformity on tomato ripening and chilling injury," *Postharvest Biology and Technology*, 56, (2), 155–162.
- Mande, J. V., Nimbalkar, S. D., Chole, R. R. (2007). Knowledge Of Farm Women Regarding Post Harvest Technology, *Journal of Dairying, Foods and Home Science*. 26 (3/4), 232-234.
- Mbuk, E. M., Basse, N. E., Udoh, E. S. and Udoh, E. J. (2011). Factors influencing postharvest loss of tomato in urban market in Uyo, Nigeria. *Nigerian Journal of Agriculture, Food and Environment*, 7(2), 40-46.
- Muhammad, R. H., Hionu G. C., Olayemi, F. F. (2012). Assessment of the post-harvest knowledge of fruits and vegetable farmers in Garun Mallam L.G.A of Kano, Nigeria, *International Journal of Development and Sustainability*, 1(2) 510- 515
- Rico, D., Martin-Diana, A.B., Barat, J. M. and Barry-Ryan, C. (2007). Extending and measuring the quality of fresh-cut fruit and vegetables: a review. *Journal of Food Science and Technology*, 18, 373-386.

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Sociological Association of Nigeria (RuSAN)

Saran, S., Roy, s.K., and Kitinoja, L. (2012).
Appropriate postharvest technologies for
improving market access and incomes for
small horticultural farmers in
SubSaharanAfrica and South Asia. Part 2:



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Rural Sociological Association of Nigeria (RuSAN)



Field trial results and identification of Vellema, S.(2008). Postharvest innovation in research needs for
selected crops. developing societies: theinstitutional ActaHorticulre. 934, 41—52. dimensions of
technological change.

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Association of Nigeria (RuSAN)