



Drivers of Postharvest Losses of Fruits and Vegetables in Nigeria

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Article History

Received: 22. 05.2022

Revised: 8. 06.2022

Accepted: 16. 06.2022

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INTRODUCTION

FAO defines Post Harvest Loss (PHL) as measurable losses in edible food mass (quantity) or nutritional value (quality) of food intended for human consumption (FAO, 2019). Enormousness of postharvest losses in the food value chain differs greatly among different crop being produced in developing countries like Nigeria. Nigeria is a country that produces a lot of fruits and vegetables for the health benefit of humans and for export purposes. The common and important vegetables in quantity and value are tomatoes, onions, and hot peppers Okra, African eggplant, cabbage, while for fruits, they are watermelon, mango, pineapple, banana citrus and this is because they are practically used daily (CBI, 2018).

The health benefits of fruits and vegetables are many, they are rich in structural tissue (protein and fibre) and ash, which goes together with a high content of micronutrients (minerals, vitamins, and other bioactive compounds) (Armachius and Vumilia, 2017). It also help decrease the incidence of stunting, which affects millions of children worldwide (Rockefeller Foundation, 2013)

High post-harvest losses are observed in all fruit and vegetable supply chains in Nigeria. It is estimated that about 40-50% of agricultural produce is lost annually and may increase with the prevailing climate change, global warming, desert encroachment and the loss of fertile arable land due to urbanization and other human activities other than agriculture (FMARD, 2016). This percentage is high because most fruit and vegetables have high moisture content and flexible outer coat which aid their ease of damage and perishability nature. Food loss is still a big task for Nigeria due to various reasons.

Most of the value chains that contribute significantly to food loss and waste are not developed and organized in terms of production and processing techniques, equipment, technology and governance. Reducing PHLs could increase the income of about 470 million smallholder farms worldwide, signifying a bold step in projecting global efforts to minimize poverty and contribute to food security and sustainability (Schuster and Torero, 2016)

Drivers of postharvest management in Nigeria

A lot of factors are responsible for losses observed across the post-harvest system in Nigeria. The system encompasses a range of interrelated activities, from harvest time through processing stage, marketing, and finally consumption decisions at the consumer level. Some of the factors include:

1. **Low expertise on crop management and good agricultural practice**
 - Lack of technical know-how on crop handling during harvesting often leads to losses such as lack of appropriate and/or poorly-designed harvesting tools, equipment, and harvesting containers.
 - Logistical mismanagement (poor handling of delicate produce)
 - Absence of an established maturity index for some commodities, and/or lack of maturity index for local export markets
 - Poor training and capacity building in these areas is crucial for increasing product yield and curbing losses and wastages at all of the stages of handling
2. **Transportation problem**
 - Poor condition of vehicles used during transport
 - Overloading of trucks which results to compression suffered by these fresh produces thereby reducing their market quality and as such are either sold at a cheap rate or destroyed.

- Use of poor packaging materials (such as raffia baskets) during transportation is a major cause of food loss at this phase of the value chain
- Poor road condition during transportation
- Lack of efficient refrigeration during transport:
- Delay by police and customs during long distance transit
- Poor use of railway transport

3. Inadequate storage and processing facilities

- Poor storage or stock management
- Insufficient modern processing facilities which creates challenges to handle high amounts of products during peak or glut seasons
- Use of rudimentary storage system
- Inadequate cold chain storage systems
- Technical malfunctions (wrong size or damaged packaging)
- Insufficient access to finance by SMEs in processing and logistics
- Unstable and expensive power grid/electricity supply
- Unavailability of suitable variety for processing
- Disconnect between research and processors and handlers
- Poor adoption level of developed technologies for storage

4. Climatic condition:

- Poor management of temperature and humidity in storage
- Poor weather at harvesting time which affects the operations and functionality of harvesting machines or human labor and usually increases the moisture content of the harvested products.
- Temperature is an important factor that influences the postharvest life of fruits and vegetables. . It determines their postharvest quality and has direct influence on growth of spoilage microorganisms. Therefore, pre-

- cooling is an important step for fresh produce pre-treatment
- Lack of controlled or modified atmospheric condition storage system
5. **Pest and diseases**
- Lack of good sanitation
 - Improper grading and sorting
6. **Unplanned or marketing strategy**
- Traffic constraints and rough offloading at major markets
 - Poor coordination with the rest of the chain and unmanaged seasonal production glut
 - Poor skills for defining a strong business model
 - Lack of strong skill set to market their value chains to off-takers.
 - Poor market intelligence
 - Lack of ultra-modern market infrastructure
7. **Inadequate Extension services**
- In Nigeria, the provision of agricultural extension services is limited due to insufficient and untrained public extension services agents. The current ratio of extension agents to farmers in Nigeria is between 1:5000 and 1:10 000.
8. **Security incidents:**
- Constant herdsman encroachment
 - Outbreaks of violence especially in the Northern part of Nigeria, cause

disruptions and ultimately lead to on farm and postharvest losses in the value chains.

- Armed robbery during highway transit and supply corridors leading to abandonment of perishable crops

9. **Biological drivers**

Biological factors include respiration rate, ethylene production and action, rates of compositional changes (associated with color, texture, flavour, and nutritive value), mechanical injuries, water stress, sprouting and rooting, physiological disorders, and pathological breakdown.

CONCLUSION

Horticulture especially fruits and vegetables are important sub-sector of Nigeria's agricultural economy with great potential for growth due to a strong export market as well as growing domestic demand. Although, it is very difficult to achieve zero losses in agricultural production but much more can be done to reduce post-harvest losses to a large extent. A great reduction in post-harvest losses of farm produce in Nigeria will not only improve the living and income of smallholder farmers but also help the country in attaining food security without necessarily having an increase in the area of land under cultivation.

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