Usage of Post-Harvest Loss Management Practices among Arable Crop Farmers in Oyo Agricultural Zone Oyo State, Nigeria

***Ajao O.W, Adebayo O.O and Tiamiyu A.O**

Department of Agricultural Extension and Rural Development, Ladoke Akintola University of Technology, Ogbomoso

***Correspondence Author**

DOI: https://doi.org/10.51244/IJRSI.2026.1307000044

Received: 04 July 2026; Accepted: 09 July 2026; Published: 24 July 2026

ABSTRACT

Arable crop farming constitutes a major component of the agricultural sector, with crops such as maize, cassava, yam, and vegetables forming the backbone of household food supply and income generation in states such as Oyo State. Despite increases in agricultural production over the years, a significant proportion of harvested produce is lost at the post-harvest stage, thereby reducing the effective availability of food and income to farmers. Hence, this study assessed the usage of post-harvest loss management practices among arable crop farmers in Oyo state, Nigeria. The population of the study comprised of all registered arable crop farmers members in Oyo State. A multistage sampling procedure was employed to select 160 respondents for this study. The data for this study were obtained from the respondents using a well-structured interview schedule while the data obtained were subjected to both descriptive and inferential statistical tools. Descriptive statistical tools employed include frequency counts, percentages, WMS and mean, while chi-square was used to test the hypothesis. The study described the socioeconomic characteristics of the respondents, effect of use of post-harvest loss management practices and investigate the constraints faced by arable crop farmers in using of post-harvest loss management practices. The study concluded that arable crop farmers in the study area often utilizes basic post-harvest management techniques. The study therefore recommended that financial institutions should provide affordable credit facilities and subsidies to facilitate farmers' access to improved post-harvest equipments.

Keywords: Usage, Postharvest, Arable crops, Arable crop farmers

INTRODUCTION

Agriculture remains a cornerstone of the Nigerian economy, functioning as a principal driver of economic activity, employment, food security, and export potential. In recent years, the sector consistently accounted for approximately 24 % of Nigeria's Gross Domestic Product (GDP), underscoring its significant role in national output outside of the oil industry (Trade.gov, 2025; Intelpoint, 2025). The sector also remains a key source of employment, engaging close to 50 % of the working population directly in farm activities, with additional labour involved in off-farm agri-food systems (Trade.gov, 2025). Beyond domestic production, agricultural exports hold important potential for economic diversification; however, export earnings have remained relatively modest despite the sector's size. For instance, recent government figures indicated that agricultural exports generated less than USD 400 million in foreign exchange, reflecting systemic challenges in transforming production into export competitiveness (Nairametrics, 2025).

Notwithstanding limited export performance relative to oil, agriculture sustains the bulk of the country's food supply and rural livelihoods, with smallholder farmers producing staple crops that meet domestic food demand and contribute to food security (Trade.gov, 2025). Collectively, these dynamics highlight agriculture as a vital engine for inclusive growth, poverty reduction, and structural transformation in Nigeria's economy. Nigeria's diverse climate make it possible to produce virtually all agricultural products that can be grown in the tropical and semi-tropical areas of the world. Nigeria is among the leading producers of many food and cash crops in the Africa continent and globally. Annually, farmers produce a lot to boost the economy but most are lost at post-

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue VII July 2026

harvest stage. Agricultural losses are one of the greatest problems facing agricultural production in Nigeria and concern everyone from the research scientists to the extension workers/ marketers in the field to the farmers on the farm and to the government policy formulators. The rapid rise expected in the global population will go hand in hand with an increase in the food demand. The ability of the world to provide sufficient and safe food to a growing population is becoming vulnerable due to environmental degradation and climate changes.

Arable crops, particularly tropical root and tuber crops such as cassava, yam, and cocoyam, remain among the most crucial staples in Nigeria's agricultural landscape and are central to household food security. According to the National Bureau of Statistics' 2022 agricultural census, a large proportion of crop-producing households cultivate root and tuber crops, with approximately 53 % reporting cassava cultivation, 40 % yam, and 24% cocoyam, reflecting their widespread role in rural and peri-urban food systems (NBS, 2024). Nigeria is the largest producer of arable crops in the world, followed by Ghana, Cote D'Ivoire, Benin, Togo, and Cameroon (FAO, 2013). As averred by Verter and Bečvařova (2014), despite the importance of maize and yams to many households, the attention to its production is still questionable, but more worrisome, is the losses incurred in the post-harvest operations due to lack of proper post- harvest processes and empirical information in the operationalization of post-harvest loss (PHL) reduction strategies. This proposition underscores the importance of consistent and reliable methodological measurement of PHL in achieving the goal of reducing PHLs (Olajide and Aderolu, 2017). In lieu of this, arable crop farming entails the production of a wide range of annual food crops (Girei *et al.,* 2018). This means that the crops life cycle from germination to seed production is complete within one year (Ibidapo *et al.,* 2018). Arable crops include; beans, soybean, cotton, yam, maize, cocoyam, cassava, rice, among others.

Post-harvest losses are more than just a waste of farm produce, it's a colossal waste of all the cumulative resources that went into production and has a direct economic impact on the income of farmers and contributes to food insecurity. Postharvest losses result in the wastage of resources such as land, water, fertilizer, herbicide, seeds, and seedlings and so on that are used in the production of crops that are not consumed or utilized for other purposes (Abbas *et al*., 2018). Due to the position they occupy in the entire food chain network, Smallholder farmers suffer a great deal of economic loss as a result of post-harvest loss. The direct impact of PHLs is on the livelihoods of farmers and other supply chain actors who depend solely on income from their produce for survival (Morris *et al.,* 2019). Reducing post-harvest losses have been identified as a vital aspect in the fight against hunger, raising farmers' income and improve food security especially in the world's poorest countries should give priority to the issue of crop losses (FAO, 2010) A study conducted by Malik *et al.,* (2015) revealed a significant relationship between pricing, arable crop farmers' consumption and poverty status.

Moreover, while the utilization of post-harvest loss management practices is expected to improve farmers' welfare by increasing income, reducing waste, and enhancing food security, there is a paucity of empirical studies assessing these effects among arable crop farmers in Oyo State. Most existing studies focus primarily on the causes and magnitude of post-harvest losses, with little emphasis on the outcomes of adopting management practices (Abass *et al.,* 2020). As such, the actual benefits and effects of these practices to farmers remain inadequately documented, hence the need to evaluate the effects of post-harvest loss management practices utilized by arable farmers in the study area.

In addition to these challenges, arable crop farmers face numerous constraints in the use of post-harvest loss management practices. These include high cost of improved technologies, inadequate storage facilities, limited access to credit, poor rural infrastructure, lack of technical knowledge, and weak institutional support (Kughur *et al.,* 2021; Adepoju and Obayelu, 2021). These constraints not only limit the adoption of improved practices but also perpetuate the cycle of losses and low productivity among farmers. Without a clear understanding of these barriers, efforts to promote post-harvest management practices may yield limited success. In order to get a comprehensive report about the constraints faced in the utilization of the post-harvest loss management practices, there is need to investigate the constraints to utilization of post-harvest loss management practices by arable farmers in the study area.

METHODOLOGY

The study was conducted in Oyo Agricultural Zone of Oyo State due to the abundance of arable crop farmers (Oxford Business Group, 2013; Adesina and Sanyaolu, 2017). It was founded as the capital of the

historic Oyo Empire in the 1830s, and is known to its people as 'New Oyo' (Ọ̀yọ́ Àtìbà) to distinguish it from the former capital to the north, 'Old Oyo' (Ọ̀yọ́-Ilé), which had been deserted as a result of the Yoruba Revolutionary Wars. Its inhabitants are mostly of the Yoruba people, and its ruler is the Alaafin of Oyo. Oyo Agricultural Zone is made up of four local government which are Atiba LGA, headquartered at Offa-Meta; Oyo East LGA, headquartered at Kosobo; Oyo West LGA, headquartered at Ojongbodu and Afijio LGA, headquartered at Jobele. The geographical location of Oyo is on latitude 7.8430° N 08N and longitude 3.9368°E. The land area is about 2,427 km^2 (937 sq mi) which is bounded in the south by Ogun State, in the north by Kwara State, in the west it is partly bounded by Ogun State and partly by the Republic of Benin, while in the East by Osun State.

The projected population of Oyo in the year 2023 was estimated at 471,000 and the growth rate was 3.29% (World Population Review (WPR 2023). Oyo is situated at the southwestern part of Oyo State. It is regarded to be a derived Savannah vegetation zone and a low land Rainforest area. A fairly high uniform temperature, moderate heavy seasonal rainfall and high humidity, characterizes the temperature is 26°C and the lowest temperature is experienced in August with a temperature of 24.3°C and the highest in March with a mean temperature of 28.7°C. Humidity is highest between July and September while lowest between December and February. The average rainfall lies between 114mm and 1275mm with most of the annual rainfall (about 92 percent) occurring in the months between March and October, with a slight fall in the month of August, and the months spanning through November to February. The mean annual temperature is about 27°C with slight variation in some months. The climatic and soil conditions of the study area favor the extensive production of arable crops like cassava, maize etc.,

The people of Oyo are predominantly farmers who specialize in growing of vegetables and arable crops. However, other income generating activities includes: trading, carpentry, blacksmithing, weaving, hair dressing, garment making among others. The residents are majorly Yoruba with few immigrants from the northern and southern part of the country.

A multistage sampling procedure was employed in the selection of respondents for this study. The first stage involved purposive selection of three agricultural blocks, namely Afijio, Atiba, and Oyo West due to the predominance of arable crop production activities in the blocks. The second stage random selection of two extension cells from each of the three blocks, resulting in a total of six extension cells. The third stage involved random selection of two villages from each of the selected extension cells, giving a total of twelve villages. Finally, a proportionate random sampling was used to select 160 arable crop farmers from the selected villages using a sampling frame obtained from OYSADEP.

RESULTS AND DISCUSSION

Respondents' socioeconomic characteristics

The result presented in Table 1 shows that 33.8% of the arable crop farmers were below 30 years of age, 23.8% were between 50-59 years, 23.1% were between 40-49 years of age and 18.1% were between 31-39 years of age while 1.3% of the respondents were above 60 years of age. The mean age was revealed to be 39 years. This result indicates that respondents are within the economically active and productive age group, capable of engaging actively in farming operations and post-harvest activities. This finding corroborates the report of Adebisi *et al.* (2019), who stated that younger farmers are often more energetic and receptive to new agricultural innovations compared to their older counterparts. Also, 51.9% of the respondents were male while 48.1% of the respondents were female. This implies that both men and women are actively involved in arable crop farming and post-harvest activities, although males slightly dominate the enterprise. This finding corroborates the study of Ajewole and Folayan (2018), who reported that both male and female farmers participate actively in post-harvest activities, although men often have greater access to land and farm resources.

More than half (79.4%) of the respondents were married, 16.3% of the respondents were single, while 4.4% of the respondents were separated. This implies that married farmers are likely to be more economically responsible and motivated to minimize post-harvest losses in order to ensure food security and income stability for their families. This findings is in agreement with Ezeh *et al.* (2020) that married farmers are often more committed to

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue VII July 2026

engaging in post-harvest management practices to ensure food sufficiency for their households. Furthermore, 45.0% of the respondents had a household size of less than 5 people, 35.8% of the respondents had between 6-8 people while 19.4% had above 10 household people. The mean household size was 7 people. This indicates that most of the respondents had moderately large households. This result implies that household size can have a direct influence on the adoption and utilization of post-harvest loss management practices**.** This finding corroborates the report of Adeniyi and Ogunsumi (2018)**,** who noted that household size significantly affects labor availability for post-harvest operations among smallholder farmers.

The result presented showed that 71.6% of the respondents had secondary education, 26.4% of the respondents had primary education. Also, 1.0% of the respondents had no formal education while 1.0% of the respondents had tertiary education. This indicates that the majority of the arable crop farmers in the study area possess a moderate level of formal education, which may enhance their ability to understand and adopt improved post-harvest loss management practices. This finding corroborates the report of Agidi *et al.* (2020), who noted that education plays a significant role in improving farmers' awareness and adoption of modern agricultural and post-harvest technologies.

Table 1: Distribution of respondents by socioeconomic characteristics n=160

Socioeconomic characteristics	**Frequency**	**Percentage**	**Mean**
Age			
≤30	54	33.8	
31-39	29	18.1	39 years
40-49	37	23.1	
50-59	38	23.8	
60≥	2	1.3	
Sex			
Male	77	48.1	
Female	83	51.9	
Marital status			
Single	26	16.3	
Married	127	79.4	
Separated	7	4.4	
Household size			
≤5	72	45.0	
6-8	57	35.7	7 Members
10≥	31	19.4	
Level of education			
No formal education	2	1.0	

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue VII July 2026

Primary education	42	26.4	
Tertiary education	2	1.0	
Secondary education	121	71.6	

Source: Field Survey, 2025

Effect of the use of post-harvest loss management practices on arable crop farmers

Results presented on Table 2 shows the distribution of respondents by effect of the use of postharvest loss management practices on arable crop farmers. All (100.0%) of the respondents indicated reduction of post-harvest loss management as effect of the use of post-harvest loss management practices, 86.9% of the respondents indicated increase farmer income, 85.6% of the respondents indicated enhancement of national food security, stimulated agro-processing industry and woman empowerment respectively, 58.1% of the respondents indicated reduction of hunger while 51.2% of the respondents indicated reduction of food prices for consumers.

This result implies that reduction in post-harvest losses as a major effect indicates that these practices are crucial into greater marketable surplus. This is in consistent with the findings of Adeoye *et al.* (2020), who found that effective post-harvest management practices lead to improved income, food security, and reduced wastage among Nigerian farmers.

Table 2 Distribution of respondents by effect of the use of post-harvest loss management practices on arable crop farmers

Effects of use of post-harvest loss management practices	**Frequency**	**Percentage**
Reduction of post-harvest loss	97	60.6
Increase farmer income	140	87.5
Reduction of food prices for consumers	74	46.3
Enhancement of national food security	86	53.8
Stimulated agro-processing industry	93	58.1
Reduction of hunger	18	11.3
Woman Empowerment	150	93.8

Source: Field Survey, 2025

***Multiple response**

Constraints faced by arable crop farmers on the use of postharvest loss management practices

Result presented in Table 4.7 shows the distribution of respondents by constraints faced by arable crop farmers on the use of postharvest loss management practices. These constraints were measured using a 3-points rating scale of major constraint, minor constraint and not a constraint. Financial constraints to buy modern post-harvest technology was ranked 1st with a weighted mean score of 1.79, poor storage facilities was ranked 2nd with WMS of 1.75, insufficient extension services on PHL management practices was ranked 3rd with WMS of 1.71, poor knowledge of PHL management practices activities was ranked 4th with WMS of 1.59, poor road networks was ranked 5th with WMS of 1.57, inadequate processing facilities was ranked 6th with WMS of 1.50 and unpredictable market and price was ranked 7th with WMS of 1.33. This finding implies that economic, infrastructural, and institutional limitations continue to hinder the effective adoption of post-harvest loss management practices among arable crop farmers in the study area. These results corroborate the findings of

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue VII July 2026

Adejumo and Raji (2020), who reported that inadequate capital and poor access to improved storage technologies remain major barriers to reducing post-harvest losses among Nigerian smallholder farmers.

Table 3 Constraints faced by arable crop farmers on the use of postharvest loss management practices

Constraints faced by arable crop farmers	**WMS**	**Rank**
Financial constraints to buy modern post-harvest technology	1.79	1st
Poor roads network	1.57	5th
Poor storage facilities	1.75	2nd
Inadequate processing facilities	1.50	6th
Poor knowledge of PHL management practices activities	1.59	4th
Insufficient extension services on PHL management practices	1.71	3rd
Unpredictable market and price	1.33	7th

Source: Field Survey, 2025

***Multiple response**

Chi square result showing relationship between selected socioeconomic characteristics of arable crops fa rmers and use of post-harvest loss management practices

Chi-square analysis in Table 4.9 reveals that significant relationship exist between marital status (χ^2= 4.081; p-value= 0.000); primary occupation (χ^2= 53.317; p-value= 0.000); secondary occupation (χ^2= 47.195; p-value= 0.000); membership of social group (χ^2= 8.510; p-value= 0.014) and use of post-harvest loss management practices. This results indicates that socioeconomic and social factors significantly influence farmers' participation and engagement in post-harvest loss management practices**.**

Marital status is evidence that married farmers may have greater household labor availability, stronger commitment to sustaining family livelihood, and thus are more motivated to reduce post-harvest losses to ensure food and income security. The significance of primary and secondary occupation implies that the level of engagement in farming or other supportive economic activities affects the extent to which farmers adopt post-harvest management practices. Those whose primary or secondary occupations are farming are more likely to prioritize the adoption of post-harvest management practices to maximize productivity and minimize losses.

Similarly, the significant association between membership of social groups and post-harvest loss management practices strengthen the role of social capital and farmer network**s** in facilitating access to agricultural information, innovations, and cooperative learning. Farmers who belong to social or cooperative groups tend to share knowledge, access collective resources, and are more likely to adopt recommended post-harvest practices. The results corroborate the reports of Adesope *et al.* (2019), who found that farmers' social participation and occupation type significantly influenced the adoption of agricultural innovations in South-West Nigeria.

Table 4.9 Chisquare result showing relationship between selected socioeconomic characteristics of arable crops farmers and use of post-harvest loss management practices

Socioeconomic characteristics	χ^2	**Df**	**p- value**	**Remark**
Sex	4.081	2	0.130	Not Significant
Marital Status	53.317	4	0.000	Significant

Primary Occupation	48.163	8	0.000	Significant
Secondary Occupation	47.195	4	0.000	Significant
Membership of social group	8.510	2	0.014	Significant

Source: Computed Data, 2025

CONCLUSION AND RECOMMENDATIONS

The study concluded that arable crop farmers in the study area often utilizes basic post-harvest management techniques. The study therefore recommended that financial institutions should provide affordable credit facilities and subsidies to facilitate farmers' access to improved post-harvest technologies.

REFERENCES

1. Abass, A. B., Ndunguru, G., Mamiro, P., Alenkhe, B., Mlingi, N. and Bekunda, M. (2020). Post-harvest food losses in a maize-based farming system of semi-arid savannah area of Tanzania. Journal of Stored Products Research, **57**: 49–57.
2. Abbas, A. M., Abbas, I. I. and Agada, I. G. (2018). Reducing postharvest losses in Nigeria's agricultural sector: Pathway to sustainable agriculture. Innoriginal International Journal of Sciences**, 5**(1): 16–21.
3. Adebisi, L. O., Afolabi, M. T. and Ogunbameru, B. O. (2019). Determinants of adoption of post-harvest loss prevention technologies among smallholder farmers in Southwestern Nigeria. Journal of Agricultural Extension, **23**(3): 45–57.
4. Adejumo, B. A. and Raji, A. O. (2020). Constraints to the adoption of improved post-harvest technologies among smallholder farmers in Nigeria. Nigerian Journal of Agricultural Economics, 10(1): 56–68.
5. Adeniyi, O. R. and Ogunsumi, L. O. (2018). Household size and its effect on adoption of post-harvest technologies among smallholder farmers in Southwestern Nigeria. Journal of Agricultural Extension, **22**(2), 76–85.
6. Adeoye, I. B., Ojo, M. A. and Adebisi, L. O. (2020). Socioeconomic impacts of post-harvest management practices among smallholder farmers in Nigeria. Journal of Agricultural Extension, **24**(4): 87–99. https://doi.org/10.4314/jae.v24i4.9
7. Adepoju, A. O. and Obayelu, O. A. (2021). Livelihood diversification and welfare of rural households in Nigeria. Sustainability, **13**(2): 1–15.
8. Adesina, K. A. and Sanyaolu, A. S. (2017). Utilization of agro-meteorological services among arable crop farmers in Oyo State, Nigeria. Journal of Agricultural Extension, 21(1), 47–59.
9. Adesope, O. M., Matthews-Njoku, E. C. and Oguzor, N. S. (2019). Socioeconomic factors influencing adoption of agricultural innovations by farmers in South-West Nigeria. Journal of Agricultural Extension, **23**(2): 45–56. https://doi.org/10.4314/jae.v23i2.5
10. Agidi, G., Adeoye, I. B. and Ojo, A. O. (2020). Influence of socioeconomic characteristics on adoption of post-harvest technologies among smallholder farmers in Nigeria. Journal of Agricultural Extension, **24**(2), 45–55.
11. Ajewole, O. C. and Folayan, J. A. (2018). Gender roles and post-harvest management practices among arable crop farmers in Southwestern Nigeria. Journal of Agricultural Extension, **22**(1): 88–97.
12. Ezeh, C. I., Onyeneke, R. U. and Amadi, M. U. (2020). Socioeconomic factors influencing the use of post-harvest loss management practices among smallholder farmers in Imo State, Nigeria. Journal of Agricultural Extension, **24**(2): 112–121. https://doi.org/10.4314/jae.v24i2.11
13. FAO (2010).Global hunger declining but still unacceptably high: International Hunger Targets Difficult to Reach. Economic and Social Development Department September 2010.
14. FAO (2013). Food wastage footprint: Impacts on natural resources. www.fao.org/sustainable-food-value chains/library/details/en/c/266219
15. Girei, A. A., Saingbe, N. D., Ohen, S. B. and Umar, K. O. (2018). Economics of small-scale maize production in Toto local government area, Nasarawa state, Nigeria. Agrosearch, **18**(1): 90-104.https://doi.org/10.4314/agrosh.v18i1.8

16. Ibidapo, I., Ogunshipe, M.H., Oso, O.P. and Akintade, T.F. (2018). Assessment of arable crop farmers' perception and adaptation to climate change in Ondo State, Nigeria. Greener Journal of Agricultural Sciences, **8**(5): 100-109.
17. Intelpoint. (2025). Nigeria's agriculture sectozr contributes ₦19.3 billion to GDP in 2023. Retrieved from Intelpoint database.
18. Kughur, P. G., Umeh, J. C. and Ater, P. I. (2021). Determinants of post-harvest losses among maize farmers in Nigeria. Nigerian Journal of Agricultural Economics, **11**(1): 45–56.
19. Malik, S. J., Nazli, H. and Whitney, E. (2015). Food consumption patterns and implications for poverty reduction in Pakistan. The Pakistan Development Review, 651 669.https://www.jstor.org/stable/43831350
20. Morris, K. J. K., Kamarulzaman, N. H. and Morris, K. I. (2019). Small-scale postharvest practices among plantain farmers and traders: A potential for reducing losses in Rivers State, Nigeria. Scientific African, 4: e00086. https://doi.org/10.1016/j.sciaf.2019.e00086
21. Nairametrics. (2025, August 19). FG decries low agricultural export earnings, below $400 million despite major GDP contribution. Retrieved from Nairametrics.
22. NBS (2014). Yam consumption and production in Nigeria. LSMS-Integrated Survey on Agriculture, National Bureau of Statistics Brief. www.nigerianstat.gov.ng. Accessed 12/10/2018.
23. Olajide, B. R. and Aderolu, M. A. (2017). Effects of trust fund model credit intervention on welfare of farmers' households in Oyo State. Agrosearch, **17**(2): 38 50.https://doi.org/10.4314/agrosh.v17i2.4
24. Trade.gov. (2025). Nigeria – Agriculture Sector. U.S. Department of Commerce. Retrieved from https://www.trade.gov/index.php/country-commercial-guides/nigeria-agriculture-sector
25. Verter, N. and Bečvařova, V. (2014). Yam production as pillar of food Security in Logo Local Government Area of Benue State, Nigeria. European Scientific Journal, **10**(31): 57 – 67.
26. World Population Review. (2023). Oyo population 2023. World Population Review. Retrieved from https://worldpopulationreview.com