

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Eight Annual Conference

Theme: Changing Paradigms in Agricultural Extension

Date: 14-18 May 2023

Venue: Agricultural and Rural Management Training Institute (ARMTI) Abuja Office

ISSN: 1595 – 1421.

Website: <http://info@ajol.org> .

Email: agricultural.extensionnigeria@gmail.com ; editorinchief@aesonigeria.org

Assessment of Yam Flakes Production among Rural Women in Baruten Local Government Area of Kwara State, Nigeria

<https://dx.doi.org/10.4314/jae.v28i1.5S>

Adefalu Lateef Lawal¹ , Saka Mariam Abimbola² , Olaitan Tunde Rafiu³ , Olaniyan Obasola Babatunde⁴ , Ogunnaike Oluwatosin Elizabeth⁵

¹Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Ilorin, Ilorin, Nigeria. Email: adefalu.ll@unilorin.edu.ng. Phone: 08063468477. Orcid ID: 0000-0003-3599-7683

^{2&} ¹Correspondence Author, Email: talk2bimbi@gmail.com. Orcid ID:0009-0001-1237-4857. Phone: +2348064648703

³Research Outreach Department, Nigerian Stored Products Research Institute, Ilorin, Kwara State.Email:

aztunde2004@gmail.com. Phone: 08065966192

Orcid ID: 0000-0001-8566-2254

⁴Research Outreach Department, National Cereals Research Institute, Badeggi, Niger State. Email:

o.babatundeolaniyan@yahoo.com. Phone: 08030703547. Orcid ID: 0009-0003-4435-7298

⁵Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Ilorin, Ilorin, Nigeria.

Phone: 09023993243

Abstract

The study assessed yam flake production among rural women in Baruten Local Government Area of Kwara state, Nigeria. The interview schedule was employed to obtain data from 120 sampled respondents. Data were analysed using percentage, mean, and Chi-square test. Findings showed that the mean age of the respondents was 38 years, with a mean of 17.4 years of experience and an average monthly income of ₦23,167. The majority (78.2%) had formal education. Fellow processors were the leading source of information (\bar{x} =3.77). Selection of fresh yam tubers (\bar{x} =4.75), storage in a cool place (\bar{x} =4.70), and washing of the tubers (\bar{x} =4.57) were the top-ranked techniques used in the production of yam flake while drudgery (mean=3.51) was the topmost constraints. Chi-square test showed that age (χ^2 =51.65), educational status (χ^2 =18.25), monthly income (χ^2 =31.21), experience in yam flakes production (χ^2 =13.90) were significantly associated with the constraints to yam flakes production. The study concluded that drudgery and inadequate storage facilities are the major constraints affecting yam flake production in the study area. The study recommends that the Women in Agriculture (WIA) should improve the capacity building of women processors to enhance the efficient production of yam flakes in the study area.

Keywords: Yam flake production; rural women; value addition

Introduction

The tuberous crop known as yam is grown all across the world (Wanita et al., 2021). In many homes, particularly in Nigeria, it makes up the majority of the basic diet. After cassava, potatoes, and sweet potatoes, it is the fourth most popular root crop consumed in the Sub-Saharan region, particularly in West Africa (Omohimi et al., 2019). According to the Food and Agriculture Organization (FAO), (2020), yams are grown on 8.9 million hectares in roughly 47 countries around the world, with Nigeria as the top producer, followed by Ghana, Ivory Coast, and Togo. Nigeria produced 50

million tonnes of yam in 2018 and 50.5 million tonnes in 2019 (Food and Agriculture Organization Corporate Statistical Database (FAOSTAT), (2020),

Large-scale yam production is closely correlated with storage conditions. Fresh tubers are actually quite perishable because of rotting caused by microbes. Root and tuber crops' perishability and postharvest losses are the main drawbacks to their utilization. Root and tuber crops remain living organisms even after being harvested, and losses that happen during storage are mostly a result of their physical and physiological conditions (Damte, 2021).

Freshly harvested yams are processed into dry products in order to minimize losses; as a result, chips and flakes are frequently produced (Ogieriakhi, et al., 2020). Yam flakes and chips can be further processed into flour, which can then be reconstituted in boiling water to create a thick paste that is used as a source of carbohydrates in tropical regions for meals (Idowu & Adewumi, 2021).

Small- and medium-sized processors (cottage and rural processors) use non-standard methods and follow a straightforward process to create yam flakes (Omohimi et al., 2019). Rural women, who make up the majority of these processors, have been hailed as the glue that binds rural families and communities. This is because rural women are essential to agriculture, food security, nutrition, land management, and rural businesses (Adeniyi et al., 2023). Yam flake is typically processed by peeling, occasionally slicing, and parboiling in hot water (65°C) for a variety of times. Next, the yam is steeped for 13–24 hours before being sun-dried to produce a dry yam that is milled into flour (Omohimi et al., 2019). It is a stabilized product with a low moisture content of only 12% that can be stored for up to a year in insect-proof settings. They are also easier to handle and less expensive to transport than fresh tubers. The flake can be ground into granules or added to foods like baby food and biscuits. New products based on yam flakes are already being developed by small-scale enterprises (Ojokoh & Adeleke, 2019). The goal of making yam flakes from raw yams is to increase storability by extending the product's shelf life. Yam flakes can be further processed into flour, which can then be reconstituted in boiling water to produce a thick paste and used as a source of carbohydrates for meals in tropical regions.

However, yam flake processors are often faced with the challenges of reducing the moisture content to an acceptable level that could make the product meet export requirements. This situation is capable of forcing the processors to operate only within the local market where they could hardly break even not to talk of making any appreciable profits from the yam flakes, they produce. It is however not clear whether the methods of processing employed by the processors the forms into which the flakes are made or other reasons are responsible for the foregoing problems. Thus, the study aimed to provide insight into yam flake production among the rural women in Baruten Local Government Area, Kwara State.

The general objective of the study was to assess yam flake production among rural women in Baruten local government area, Kwara state while specifically the study:

- i. identified the sources of information on yam flake production in the study area,
- ii. examined the various techniques used in yam flake production in the study area, and
- iii. identified the constraints associated with yam flake processing techniques among the respondents in the study area.

Hypothesis of the study: There is no significant relationship between some selected socio-economic characteristics of the respondents and the constraints to yam flakes production.

Methodology

The study was conducted in Baruten Local Government Area, Kwara State, Nigeria, which borders the Republic of Benin. Kosubosu serves as her administrative headquarters. The four districts that make up Baruten LGA are Yashikira, Sanara, Ilesha, and Okuta. Latitude 2° 3'30.1 N and longitude 8°45'1 -10° are the coordinates of its location. It had a population of 209,459 as at the 2006 census (National Population Census, 2006) and it has a 9,749km² area. With a 9,749km² territory, Baruten local government area is the largest in Kwara state in terms of area. The majority of the inhabitants are involved in yam farming and processing.

The population of the study comprised all rural women who are involved in yam flake production in Baruten Local Government Area, Kwara State. A two-stage sampling technique was used for the selection of respondents for the study. A simple random sampling was used to select six communities from the local government area, which include Kosubosu, Okuta, Boriya, Shiya, Banikani and Yanri. The second stage involved the random selection of 20 rural women producing yam flake in each community selected which gives a total sample size of 120 respondents for the study.

The primary data for this study were collected by the use of an interview schedule designed according to the set objectives of this study. Content validity of the instrument was done by experts in the field of Agricultural Extension and Rural Development. Scales in the instrument were tested and considered reliable having obtained 0.78 Cronbach’s alpha coefficient. Data collected was analysed with the aid of Social Science Statistical Package version 20.0 and outputs were presented in percentage, and mean score. The hypothesis of the study was tested with the use of the chi-square test.

Results and Discussion

Sources of Information on yam flake production

Table 1 shows the ranking order of sources of information as provided by the selected women yamui flakes producers in Baruten LGA. The table shows that the highest-ranked source of information in Baruten LGA of Kwara state is from their fellow processors with a mean response of 3.85

Table 1: Sources of information on yam flake production

Sources	Mean
Fellow processors	3.85
Family members	3.77
Radio	2.52
Extension agents	2.20
Extension publication	2.07
Internet	1.99
Television	1.97
Newspaper	1.92

Source: Field Survey, (2022)

. This is such that the study area is a rural area and most people do not have access to certified and reliable source of information. The respondents identified information from family members (3.77) as the second ranked source of information. Due to unavailability of credible media in the area, the women yam flakes producers have no option but to rely on news from close friends and family members. The third ranked source of information is radio (2.52). Other preferences of source of information in order of ranking as indicated by the respondents include; extension agents (2.20), extension publications (2.07), internet (1.99), television (1.97) and newspaper (1.92). As can be seen from the result, the least ranked source of information was technological sources which included the Internet, television and newspapers. This shows that even though the least ranked sources of information are still the most reliable, the women yam flake producers in the area do not use them which can be attributed to the geographical and socio-economic characteristics of the respondents. This result is consistent with Olatinwo (2018), where cassava processors in Nassarawa state majorly relied on information from friends/neighbours.

Techniques Used in the Production of Yam into Flake

Table 2 shows the techniques used in the production of yam into flakes as adopted by women in the study area. The result as depicted in Table 2 shows that the selection of fresh tubers (4.75) is among the techniques of producing yam flake, it reveals that the selection of fresh tubers is one significant technique to be used, it further reiterates that the quality of the end-product of a food item majorly depends on the quality of material used in the production.

Table 2: Techniques used in the production of yam flake

Techniques	Mean
Selection of fresh yam tubers	4.75
Store yam tubers in a cool place	4.70
Wash yam tubers to remove dirt	4.57
Peeling of yam tubers	4.56
Cut/slice into small shapes	4.54
Boil for 30 minutes and drain thoroughly	4.48
Allow to cool at room temperature	4.29
Dry under sun or oven dry	2.66

Source: Field Survey, (2022).

Other techniques are; storing yam tubers in a cool place (4.70), washing yam tubers to remove dirt (4.57), peeling yam tubers (4.56), cutting/slicing into small shapes (4.54), boiling for 30 minutes and draining thoroughly (4.48), allow to cool at room temperature (4.29), and dry under sun or oven dry (2.66). These techniques are in tandem with the techniques described by Siyanbola (2018) in the appraisal of yam chip processors in the Saki area, Oyo state.

Constraints to Yam Flake Production

In order to get deeper insights into yam flake production among rural women in Baruten LGA of Kwara State, the constraints to yam flake production as posited by the respondents are displayed in Table 3.

The constraints were however ranked according to their mean in which the drudgery ranked first. This shows that the most significant challenge faced by the respondents is drudgery (3.51) which indicates that the production process of yam flakes is exhausting.

Table 3: Respondents’ constraints to yam flake production

Constraints	Mean
Drudgery	3.51
Poor storage	3.49
Poor transportation	3.49
Inadequate access to credit	3.45
Inadequate processing facility	3.01
Non-availability of yam in the right quantity	1.88

Source: Field Survey, (2022)

Poor storage (3.49) came second which reveals that the producers of yam flakes in Baruten have inefficient storage systems which can cause significant damage to the quality of yam flakes. If they are not properly stored, the economic value of such flakes reduces which in turn reduces the earning capacities of rural women who engage in yam flakes production. The mean response to the third-ranked constraint is poor transportation (3.49). This is such that the road network in rural areas is always poor which makes it difficult for yam flakes producers among other yam producers move their stock to their preferred location. In addition, lack of efficient transportation ultimately results in high transportation costs which make the production of yam flakes less lucrative. Other identified constraints as revealed in Table 3 were; poor access to credit (3.45) and inadequate processing facility (3.01). From the results in Table 3, it was revealed that the non-availability of yam in the right quantity (1.88) which shows that the non-availability of yam in the right quantity was not a severe constraint facing producers of yam flakes in the study area. This result is in line with Okunola & Olapade (2022) in their study of analysis of Yam Flour Marketing in Olorunda Local Government Area of Osun State, Nigeria.

Relationship between Selected Socio-Economic Characteristics of Respondents and Constraints to Production of Yam Flake.

As revealed in Table 4, age, educational status, average monthly income and experience in yam flake production have a significant relationship with yam flake production χ^2 (51.658, 18.25, 31.215 and 13.90 respectively)

Table 4: Relationship between socio-economic characteristics of the respondents and constraints in yam flake production techniques

Socio-economic characteristics	Chi-square
Age	51.658*
Marital Status	7.400
Educational status	18.254*
Household size	4.483
Monthly income (Naira)	31.215*
Experience in yam flake production	13.90*

*P≤0.05

However, marital status and household size have insignificant χ^2 such that their p values are less than 5%. Based on this, it can be asserted that socio-economic factors that influence the constraints faced in the production of yam flakes are age, educational status, average monthly income and experience in yam flake production. This may imply that as the age of the processors increases, the physical strength to engage in the yam flakes production activities will decline and become more difficult, also older processor may not likely adopt modern production techniques while a younger processor may likely adopt modern techniques. Education is known to have a positive relationship with the adoption of modern techniques, such that an educated rural woman who engages in yam flake production may likely face less challenge than those not educated. While as monthly income increases constraints faced by the processors may likely reduce, whereas, as the years of experience in yam flakes production increases, the constraints faced by the processors is expected to reduce because of the experience gathered over the years which is expected to assist in mitigating the constraints faced.

Conclusion and Recommendations

The study concluded that the main techniques employed by the yam flake producers include the selection of fresh tubers, peeling of yam tubers, and washing to remove dirt, among others. However, drudgery, inadequate storage facilities and inefficient transport systems are serious constraints to efficient yam flake production in the study area.

The women in Agriculture (WIA) unit of the Kwara ADP should intensify their training programmes on the yam value chain, including building the capacity of the women on yam flake production in the study area. Yam flake producers in Baruten should be provided with a good storage system by the government or by their association.

Transportation issues in rural areas should be amended as this deters profit-making by increasing the handling cost of produce.

References

- Adeniyi, V.A, Akangbe, J.A., Kolawole, A.E., Ayeni, M.D & Olorunfemi, D.O (2023). Women cassava processors' livelihood; implications for improved processing technology usage in Nigeria, *Cogent Social Sciences*, 9, 1-22
<https://doi.org/10.1080/23311886.2023.2191898>
- Damtew A. (2021). Review on Postharvest Handling Practices of Root and Tuber Crops, *International Journal of Plant Breeding and Crop Science*, 8(1), 992-1000.
- Food and Agriculture Organisation. (2020). FAOSTAT statistics division of food and Agriculture organisation. Retrieved from <http://www.faostat.org>.
- Omohimi, C., Piccirillo, C., Ferraro, V., Roriz, M. C., Omemu, M. A., Santos, S. M. D., Da Ressurreição, S., Abayomi, L., Adebowale, A., Vasconcelos, M. W., Obadina, O., Sanni, L., & Pintado, M. M. E. (2019). Safety of Yam-Derived (Dioscorea rotundata) Foodstuffs-Chips, Flakes and Flour: Effect of Processing and Post-Processing Conditions. *Foods (Basel, Switzerland)*, 8(1), 12.
<https://doi.org/10.3390/foods8010012>
- Ojokoh, A. O., & Adeleke, B. S. (2019). Processing of Yam Paste (Amala): A Product of Fermented Yam (Dioscorea rotundata) Flour. *International Annals of Science*, 8(1), 87–95. <https://doi.org/10.21467/ias.8.1.87-95>
- Idowu, D. O. & Adewumi, H. O. (2021). Evaluations of some Selected Yam Flour Production Variables on Drying Time and Final Moisture Content of Sliced Dried Yam. *Direct Research Journal of Agriculture and Food Science*, 9, 344-349. DOI: <https://doi.org/10.26765/DRJAFS63571652>
- Ogieriakhi, M. O., Udezi, I. Y. & Osayi, C. P. (2020). Economic Analysis Of Yam Processing Into Yam Flour In Saki Agro Ecological Zone Of Oyo State, Nigeria. *Journal of Humanities, Social Sciences and Creative Arts*, J. Hum. Soc. Sci. Crtv. Arts 2020, 15: 77–91.
- Okunola, S.O & Olapade, O.F (2022). An Analysis of Yam Flour Marketing in Olorunda Local Government Area of Osun State, Nigeria, *International Journal of Marketing and Communication Studies*, 6(1), 82-94. DOI: 10.56201/ijmcs.v6.no1.2022.pg82.94
- Olatinwo L. K. (2018). Assessment of information sources used by cassava processors in Nassarawa state, Nigeria, *International Journal of Agriculture and Development Studies (IJADS)*, 3 (2), 88-92.
- Siyabola, M. F. (2018). Women in Rural Development: An Appraisal of Yam Chips Processors in Saki Area Oyo State, South West Nigeria, *International Journal of Environment, Agriculture and Biotechnology*, 3(3), 965-972,
<http://dx.doi.org/10.22161/ijeab/3.3.32>.
- Wanita, Y. P., Indrasari, S. D., Wiranti, E. W., & Kristantini. (2021). The quality improvement of yam flour (Dioscorea alata) through the fermentation process. *IOP Conference Series*, 759(1), 012031. <https://doi.org/10.1088/1755-1315/759/1/012031>
- National Population Census (2006). Population of Kwara State.