

CASSAVA PROCESSING TECHNIQUE AMONG WOMEN IN AGRICULTURAL ZONES IN BAYELSA STATE, NIGERIA

¹Moroyei E., ²Dr. Roland, G.

^{1&2}Department of Agricultural Education,

Isaac Jasper Boro College of Education Sagbama, Bayelsa State, Nigeria.

E-mail: kingstonebi@gmail.com

ABSTRACT

The cassava processing techniques used by women in the Sagbama agricultural zone of Bayelsa State, Nigeria, were the focus of this research. Only 172 of the original 180 surveys sent out to the study population were returned. Descriptive statistics and regression analysis were employed for the analysis. The study shows that people in the 30–39-year age range were mostly involved in cassava processing. About 71.5% of the women were married, while 44.2% were able to complete secondary school. Cassava processing employed an average of 8 people per household. About 51.2% had 6–10 years of processing experience. The major technological tools used were a mechanical grater and screw press. The most common pieces of equipment used included a mechanical grater and a screw press. At $P < 0.05$, age, educational status, and processing experience have positive regression coefficients of 0.234, 0.375, and 0.002, while marital status and household size have negative regression coefficients of 0.003 and 0.439, respectively. This indicates that the five socioeconomic indicators are significantly affected by the techniques used in cassava processing. It is recommended that women adopt proper ways to optimize the processing of cassava.

Key words: Cassava Processing, Technique, Agricultural Zone

INTRODUCTION

Women's contributions to the economy are vital and ever-evolving; they are highly adaptable to new circumstances and frequently come up with novel solutions. In modern-day Nigeria, women perform a variety of crucial roles in the agricultural sector. In Nigeria, women account for the majority of the population (FGN, 2006). Fapojuwo (2010) noted that in Nigeria, a larger proportion of women than men work in agriculture. This means that a larger proportion of food for domestic consumption and exports is produced by women. The goal of agricultural extension in Nigeria was to provide farmers with the necessary education, information, and training to enable them to adopt modern technologies, thereby increasing production and generating income for the nation.

Farmers have no choice but to learn and implement the extension system's recommended technologies, as pointed out by Albright (2006). There are many effective agricultural technologies that farmers are not using, as noted by Ajibola (2005). Together with the Research Institutes and Input Agencies, Associated Bodies and their Programs in Agriculture are currently tasked with the transfer of cutting-edge technologies (Abdoulaye, 2014; Ajibefun and Daramola, 2003). Women's agricultural extension services are solely responsible for empowering people to make use of existing techniques for cassava production. Since the female literacy rate was 48% and the empowerment index was 42.64%, any meaningful program to empower women should be based on education, whether formal or informal.

According to Bello (2013), teaching women agronomy, business management, and advanced farming operations via entrepreneurship technologies is the most effective way to increase women's economic independence. Farmers can increase their output by using modern agricultural practices (technology) (Sasore, 2005), so it's important for people to recognize the

value of technique in agricultural development. In the 16th and 17th centuries, Portuguese explorers brought the cultivation of cassava to the Nigerian city of Warri (Yahaya & Aina, 2007). Since that time, cassava has been widely used as a staple food, and its cultivation should be upgraded to meet rising domestic and international demand. Cassava has provided a means of eradicating poverty (Nweke, 2003).

Although considerable breakthroughs have been accomplished internationally in the domain of food processing technologies and storage, as of now, Nigerian women still use traditional methods of cassava preservation. This is a significant difficulty in cassava processing and storage. Inadequate postharvest facilities for cassava processing are mostly to blame for this issue. (IITA) (2004). As a result, the country's rural food processors, who are responsible for 80 percent of the nation's processed food, require special consideration (Nweke et al., 2004). There is a pressing need to aid and educate the predominantly female farmers in rural Nigeria, who tend to produce most of the country's staple foods. Since this was the case, the research set out to assess how well-versed women in Bayelsa State were in contemporary methods of cassava processing.

MATERIALS AND METHODS

The Study Area

The town of Sagbama, which is in Bayelsa State, was the site of the research. The women in this commercial part of the state are responsible for the majority of the farming, fishing, petty trade, and cassava processing. The area's favorable soil conditions are the result of its favorable geographical location. There are many rivers in this part of the state. The dense tropical rainforest receives an average of 2400 mm of rain per year and has temperatures between 2600 and 3100 °C (Kainga, 2013). Mangrove forests and freshwater wetlands with cash crops are typical of the area's vegetation (Kainga, 2013). The Niger Delta's arc is defined by its 12,000 square kilometers and 185 kilometers of coastline (Oyegun 1999). It shares borders with Delta State to the north, River State to the east, and the Atlantic Ocean to the west and south, and its coordinates are 040°45'N, 050°23'S, 050°22'W, and 060°45'E (Aniefiok et al., 2013). As of 2010, 1,704,515 people called the state of California home (Oyegun, 1999).

Research design, sampling procedure, and sample size

In order to better understand the topic, a descriptive survey methodology was used for this investigation. This is because survey research makes it possible to collect data from a sample that is representative of a larger population and then use that data to infer whether or not a relationship exists between variables. The 172 female participants were chosen from 35 different communities in the Sagbama Local Government Areas (LGAs) in Bayelsa State. The researchers used a multi-stage sampling strategy for the investigation. First, 23 out of the total 32 localities in Sagbama LGA were chosen using a purposive or judgmental selection method. Second, a disproportionate sample method was used to choose 5 respondents from each of the 22 communities and 10 respondents from the remaining community. Also, 12 different localities within Ekeremor LGA were surveyed, and five residents from each were chosen using the disproportionate sampling method. There are now a total of 180 cassava entrepreneurs, with 120 from Sagbama and 60 from Ekeremor having responded to the survey. One hundred eighty (180) business owners were found to be representative of the population under study at the 95% confidence level, however, using the population size determination method developed by Taro Yamane (1973).

DATA COLLECTION

Instrument for data collection, validation, and reliability

The instrument for the data collection is a well-structured questionnaire. The instrument was validated by the supervisor and two additional specialists from the Department of Agricultural Science, Ndele Campus of Ignatius Ajuri University of Education, Rivers State. The reliability of

the instrument was verified using the split-half reliability procedures. Cronbach's alpha analysis was used to calculate a reliability coefficient of 0.5 after the instrument was given to farmers and the resulting scores were split in half. (UCLA, 2016)

Administration of the instrument

Personal administration by the researcher resulted in a total of 180 questionnaires being distributed, of which 172 were returned and used in the analysis.

Method of data analysis

The mean, standard deviation, chart, and simple percentage were used to analyze the data. A regression statistic was also used to determine the technical circumstances or aspects affecting cassava technologies on the output of participants involved.

Results

According to Table 1.1, 9% of respondents are in the 20–29 age range, 45.3% are in the 30-39 age range, 26.7% are in the 40–49 range, 18.6% are in the 50–59 range, and 4.1% are 60 or older. The median age of those who participated was 41. People in the 30–39 age bracket were found to be the most active in the cassava processing sector. The table also revealed the respondents' household sizes: there were a total of 90 (52.3%) households with a size of between 7-9 people, 45 (26.2%) households with a size of between 7-9 people, and 27 (15.7%) households with a size of between 10 and 12 people. It shows that the most common family size was seven to nine people. In the area that was being looked at, the typical family consisted of eight people.

The result also revealed the years of experience as stated in Table 4.1: Of the respondents, 28 (16.3%) had experience processing in the range of 1–5 years; 88 (51.2%) had experience processing in the range of 6–10 years; 24 (14.0%) had experience processing in the range of 11–15 years; and 32 (18.6%) had experience processing in the range of 16–20 years. It is obvious that a larger percentage of respondents have processing experience ranging from 6–10 years. The average time spent processing was 8.2 years.

According to a demographic survey of women involved in cassava processing technology, 30 women (17.4%) are single, 100 women (58.1%) are married, 15 women (8.7%) are divorced, 5 women (2.9%) are widowed, and 22 women (12.8%) are separated. In addition, this suggests that there were more married women participating. In terms of level of education, Table 4.1 shows that 19 (11.0%) had no formal education, 25.0% had completed primary school, 44.2% had completed secondary school, and 19.8% had completed post-secondary education. This means that more adopters had at least some secondary education; thus, they require greater education from extension agents on the proper application of cutting-edge technologies.

Table 1: Socio-economic characteristics of women involve in the cassava processing.

Socio-Economic Characteristic		Frequency	Percentage	Mean
Age (years)	20-29	9	5.2	41.6 yrs
	30-39	78	45.3	
	40-49	46	26.7	
	50-59	32	18.6	
	60-69	7	4.1	
Household size	1-3	10	5.8	8.0 per
	4-6	45	26.2	
	7-9	90	52.3	
	10-12	27	15.7	

Processing experience (years)	1-5	28	16.3	8.2 yrs
	6-10	88	51.2	
	11-15	24	14.0	
	16-20	32	18.6	
Marital Status	Single	30	17.4	-
	Married	100	58.1	-
	Divorced	15	8.7	-
	Widowed	5	3.0	-
	Separated	22	12.8	-
Educational status	Non-formal Ed.	19	11.0	-
	Primary			-
	Secondary	43	25.0	-
	Tertiary	76	44.2	-
		34	19.8	

Items 1, 2, 3, and 4 (mean scores > 2.50) were deemed acceptable by the respondents, whereas items 5 and 6 (mean scores < 2.50) were deemed unacceptable. The results imply that in lieu of the chipping and milling machines, respondents made use of the mechanical grater, power screw press, fryer, and mechanical sifter due to a lack of qualified machine repairers and tainted spare parts.

Table2: Respondents view on the technique used in cassava processing among women in Sagbama.

S/No	Machines	Mean	Std. Deviation	Decision
1.	I use mechanical grater in processing cassava because it is faster.	2.71	21.277	Accepted
2.	I use screw press to drain water content of grated cassava dough.	3.19	28.515	Accepted
3.	I use fryer to fry press and dried cassava dough.	2.93	24.454	Accepted
4.	I use mechanical sifter for the purpose of making the dough granulated for frying into garri.	2.80	22.081	Accepted
5.	I use chipping machine for slicing and dicing roots in addition to the feeding, power and drive units.	2.20	14.760	Rejected
6.	I use the milling machine for crushing of cassava.	1.93	12.562	Rejected

Table 3 displays how survey participants feel about the factors that slowed the widespread use of the aforementioned methods in cassava processing. As the factor with the highest weight (97.1%), insufficient financing facilities topped the list of obstacles. Adequate interaction with the extension was ranked second by 94.2% of respondents. The high cost of the machinery came in at number four, and the high cost of transportation came in third at 83.1%. The high price of cassava tubers (66.3%), followed by their bulkiness (50.6%), rated fifth and sixth, respectively. There were also other obstacles, such as poor access roads (31.4% of the total) and far-flung processing centers (13.4%).

Table 3: Distribution of respondents according to constraints leading in the adoption of the above techniques in processing cassava.

Constraints	Frequency	Percentage	Rank
Inadequate credit facilities	167	97.1	1
Inadequate extension contact	162	94.2	2
High cost of transportation	143	83.1	3
High cost of machines	136	79.1	4
High cost of cassava tubers	114	66.3	5
Bulkiness of cassava tubers	87	50.6	6
Bad access roads	54	31.4	7
Long distance processing centre	23	13.4	8

The preceding result indicates that the five socioeconomic variables have a significant influence at $p < 0.05$ in using the modernized approach in processing cassava. For females specifically, a positive (0.234) regression coefficient for age's influence is statistically significant ($p < 0.005$). Adoption was also significantly influenced by marital status (with a negative regression value of 0.003). A positive regression coefficient of 0.375 was found between level of education and adoption. The regression coefficient for household size is -0.439, indicating that it also plays a major role. An opinion sample's processing history was positively related to that history, as measured by a regression coefficient of 0.002.

Table 4: the socio-economic characteristics of women and significant (>0.05) influence in processing of cassava.

Variable	Coefficient	Standard error	t-value	Sig.
Intercept	0.792	0.077	10.308	0.000
Age	0.234	0.047	5.033	0.000
Marital status	-0.003	0.039	-0.076	0.000
Educational status	0.375	0.035	10.871	0.000
Household size	-0.439	0.051	-8.688	0.000
Processing experience	0.002	0.011	0.159	0.000

$R=0.893$ $R^2=0.798$ $F\text{ value}=131.173$ Significant diff. recorded at $P < 0.05$

Discussion

The results show that people between the ages of 30 and 39 participated heavily in the cassava processing. The data showed that older individuals were more likely to embrace cutting-edge data analysis tools. Atala's (1984) research on the socioeconomic impact of agricultural innovation participants corroborated these findings. The authors of the study found that farmers'

ability to innovate was impacted by their socioeconomic status.

In terms of the average number of people in a household using modern technology, the results showed that the percentage frequency was 8.0. This indicates that a larger proportion of the sample agrees with the statement that 52.3% of the population participated actively. This is consistent with the research conducted by Adebayo and Onu (1999), which found that large households were thought to represent an important source of labor for themselves. The regression coefficient for household size being negative is 0.439, and it has a positive ($p < 0.05$) effect on the use of advanced methods. The results imply that the more people who live in a home, the less likely it is that these methods will be used.

According to the data, the typical processing experience for the frequency percentage was 8.2 years. This indicates that a large proportion of respondents had at least eight years of experience processing data. There was a positive regression coefficient of 0.002 for respondents' processing experiences, indicating a significant variation in women's uptake of cutting-edge techniques. This suggested that as experience with processing grew, so did its adoption or use.

Divorced, widowed, single, and separated women were the least common, with only a fraction of the frequency of married women (58.1%). This lends credence to Ekong's (2003) finding that many married people try to feed their families by farming. The adoption decision was significantly ($p < 0.05$) impacted by marital status (with a negative regression coefficient of 0.003). This implies that there is no technological difference between married and single people. Female respondents with a secondary school education level of 76 (44.2%) showed the highest frequency overall. Evidently, more people think it's important for adoptees to finish high school. Ekong (2000) found that "Education is a dynamic instrument for enhancing women's participation in agricultural production," which is consistent with our findings.

Regression analysis shows that educational level is significantly related to adoption approach at $p < 0.05$. Across the board, modern cassava processing technology adoption is positively influenced by all socioeconomic variables. R^2 equaled 0.798, meaning that the correlation was extremely strong. This means that the chosen socioeconomic variables accounted for about 79.8% of the observed variations in the implementation of cutting-edge methods of operation. It's possible that extraneous variables account for the remaining 20.2% not accounted for by the models.

The respondents' use of mechanical equipment like graters, presses, fryers, and sieves shows that they put these tools to good use in the cassava-growing process. Furthermore, the results demonstrate that the respondents do not make use of chipping and milling machines. A greater proportion of respondents' plight is reflected in their responses to the difficulties that led to the adoption of the involving techniques. Without an appropriate financial loan, adopters cannot fully adopt current technology, consequently resulting in a decline in productivity. This supported the findings of Sasore's (2005) study, which found that farmers who adopt new agricultural techniques see increases in output. Insufficient extension contact ranked as the second most restrictive factor. This finding suggests that adoption partners have not been contacted by extension agents.

Respondents ranked higher transportation costs and machine prices as the third and fourth most significant limitations, respectively. It has been noted that the cost incurred by transporting cassava tubers from the farm or market to the processing centers is substantial. There are also higher charges for bringing their produce to market. Because most of these people cannot afford the expensive, improved cassava processing machines, they must instead invest heavily in transporting their goods. We ranked the high price of cassava tubers and their bulkiness as 5th and 6th, respectively. The cassava tubers are so cumbersome that they are a hassle to transport. A delay in processing cassava may result from inefficient links among processors, farmers, and

transporters, according to Ayoade and Adeola (2009). There were also other factors noted, such as bad access roads and long distances, which ranked 7th and 8th, respectively. These limitations arise from the methods currently used to prepare cassava in the research locations.

CONCLUSION

Cassava processing outcomes may be affected by the methods used. Therefore, it follows that the respondents' standard of living would improve if they made use of the proper processing technique, which would lead to higher output and income. The widespread use of contemporary cassava processing methods is heavily influenced by socioeconomic factors.

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