



SOCIO-ECONOMIC CHARACTERISTICS AND CONSTRAINTS OF WOMEN ENGAGED IN IMPROVED RICE PROCESSING TECHNOLOGIES IN WESTERN AGRICULTURAL ZONE OF BAUCHI STATE, NIGERIA

¹Joseph, U. G., ¹Hassan, A. B. and ²Garba, A.

¹Department of Agricultural Extension and Rural Development,
Abubakar Tafawa Balewa University Bauchi

²Department of Agricultural Extension and Rural Development,
Federal University Dutse, Jigawa State

Corresponding Author's Email: graceamodu@gmail.com, **GSM:** 08136702088

ABSTRACT

This study examined the socioeconomic characteristics and constraints of women engaged in improved rice processing technologies in western agricultural zone of Bauchi state, Nigeria. Multi-stage sampling technique was employed in selecting 240 respondents. Data was directly collected from the primary source using structured questionnaire and analyzed using descriptive statistics. The results disclosed the mean age of the respondents was 38 years, mean household size was 7 person and mean processing experience was 12 years. Majority (70.8%) of the respondents were married and 42.0% of them had attended secondary education. Major constraints of the women processors, includes high cost of technology (93.2%), complexity of the technologies (92.1%) and inadequate access to agricultural credits (81.4%). It is therefore, recommended that, fabrication of local rice processing machines that could be affordable by the processors should be developed, government should provide incentives and credits to rice processors in the study area.

Keywords: Socioeconomic, Characteristics, Rice processing, Technologies and Women

INTRODUCTION

Rice (*Oryza sativa* L.) is one of the widely cultivated cereal crops and consumed all over the world. Rice belongs to the family “Gramineae” and the genus “*Oryza*”. There are about 25 species of *Oryza* where only two species are cultivated, namely *Oryza sativa* Linus and *Oryza glaberrima* Stead. The former is originated from North Eastern India to Southern China but has spread to all parts of the world. The latter is still confined to its original home land, West Africa. The crop is considered a very special food of choice in Nigeria which is consumed in Nigeria by virtually all households in urban and rural areas accounting for more than 20% of all meals consumed per week, often in different forms (Ekundayo, 2023). It is also, one of the main staple foods for 70% of the population of the world. Africa produces an average of 14.6 million tons of rough rice in the years 1989- 1996 on 7.3 million ha of land equivalent to 2.6 and 4.6 percent of the world total production and rice area respectively. Africa also consumes a total of 11.6 million tons of milled rice per year, of which 3.3 million tons (33.6%) is imported (Statista, 2022). Nigeria ranks the highest as both producer and consumer of rice in the West Africa Sub-region. However, in terms of area of land under food crop production in the Country, rice ranks sixth (after sorghum, millet, cowpea, cassava and yam) (Adetimehin *et al.*, 2018). Women play vital roles in rice processing in Nigeria; producing about 60-80 percent of food in the country and contributing about 70-80 percent of the agricultural labour force. Henceforth, they contribute to household well-being through their income-generating activities. (Okunlola *et al.*, 2020)



Demand for milled rice is rising in Nigeria as the population grows and access to higher-quality food is limited (Obianefo *et al.*, 2022). The current economic situation in Nigeria has made milled rice an option for many families. The United State Department of Agriculture (USDA) noted that rice is the main staple for most Nigerian diets and is, therefore, a highly sought-after commodity (USDA, 2019). The popularity of milled rice, particularly amongst the lower-income population, has created a sharp increase in demand for this product. There is little or no literatures on the adoption of improved rice processing technologies especially among women processors in Western Agricultural Zone of Bauchi State. The study on the socioeconomic characteristics and constraints of women engaged in improved rice processing technologies in Western Agricultural Zone, Bauchi State Nigeria will fill the gap in the field of study, add to body of literatures which will serve as a guide for policy makers and further research. It will also contribute to knowledge by making available empirical information and providing direction as to which interventions are to be appropriately focused. The broad objective of the study was to examine the factors influencing adoption of improved rice processing technologies by women processors in Western Agricultural Zone, Bauchi State Nigeria, while the specific objectives were to;

- i. describe the socio-economic characteristics of the respondents
- ii. describe constraints to use of improved rice processing technologies in the study area

METHODOLOGY

The Study Area

The study was carried out in Western Agricultural Zone of Bauchi State, Nigeria. Bauchi state Comprises of three Agricultural Zones namely: Northern Zone (9 LGAs) Central Zone (4 LGAs) and Western Zone (7 LGAs). The Western Zone has 7 Local Government Areas, namely; Bauchi, Dass, Tafawa- Balewa, Toro, Kirfi, Bogoro and Alkaleri Local Government. The Study area is located between latitudes 9°30' and 10°48' North of the equator, and between longitudes 8°45' and 15'. East of the Greenwich Meridian. The area has a total land mass of 49,259sq kilometres. Bauchi State is bordered in a clockwise direction by Yobe, Gombe, Taraba, Plateau, Kaduna, Kano and Jigawa states. (BSADP, 2015). The study area has the population of 2,591,767 million people (NPC 2018 Projection). The major occupations of the people include farming, livestock rearing and trading. The climate of the study area is characterized by long dry season (October-May) with a short rainy season (May-October). The study area falls within the Sudan Savannah vegetation zone with an annual rainfall of 1300 mm per annum, which commences in April and ends in October. The State has an average temperature of 28.3^{0C}; the warmest months are February to April, where temperatures exceed 45^{0C}. During the harmattan period, a dry cold dusty wind is experienced between November to February with a minimum temperature of about 19^{0C}. The vegetation of the study area falls within the Sudan Savannah agro-ecological zone which is characterized by scattered trees that have scaly barks and most of which are thorny in nature. The soil of the study area is predominantly sandy to sandy-loam with low fertility level particularly poor in primary nutrient like nitrogen, phosphorus and potassium. The major tribes of the area are Hausa, Fulani, Jarawa, Sayawa, Terawa and minor tribes such as Yoruba, Igbo, Nupe and other Nigerian tribes are found. Agricultural production counts for greater percentage of the total employment in the study area and as a result, over eighty percent (80%) of the inhabitants of the state practiced one form of agriculture or the other in which different crops and livestock are produced.



Sampling Procedure and Sample Size

Multi-stage sampling procedure was used for the selection of 240 respondents. In the first stage, two (2) Local Government Areas were purposively selected from the zone which include; Bauchi and Dass. In the second stage, six (6) villages were randomly selected from each of the selected LGAs making a total of 12 villages. In the final stage, proportionally sampling of 10% was used to obtain 240 respondents from the study area.

Table 1: Sampling Size of Respondents

LGAs	Villages	Sampling Frame	Sample Size (10%)
Bauchi	Liman Katagum	158	16
	Lushi	121	12
	Wunti dada	141	14
	Kangere	267	28
	Kundum	109	11
	Tirwun	211	21
Das	Bagel	260	26
	Bundot	223	22
	Burgel	252	25
	Lushi	205	21
	Dott	240	24
	Durr	199	20
Total		2386	240

Method of Data Collection

Primary data was obtained through the administration of structured questionnaires from the respondents. The data covered the socioeconomic characteristics of the respondents, sources of information on improved rice processing technologies and constraints to the adoption of improved rice processing technologies among others. Secondary data were obtained from textbooks, articles, journals and past projects.

Method of Data Analysis

Data for the study was analysed using descriptive statistics. Descriptive statistics such as frequency, percentage, and mean were used for achieving the objectives.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Rice Processors

The result from Table 2 reveals the socioeconomic characteristics of rice processors in the study area. The result shows that 29.9%, 23.8%, 22.9% and 18.8% of the rice processors were within the ages of 30-36 years, 37-42 years, 49 years and above and 43-48 years of age respectively. Only 6.7% of the rice processors were within the ages of 24-29 years. This implies that most of the rice processors were within their active ages of production in agriculture, which could increase the tendency adopting rice processing technologies as young processors with vision of better living standards and high taste of social and infrastructural facilities in the study area. The finding is related to that of Adejoh *et al.* (2017) who reported 35 years as the average age of farmers participating in the IFAD Commodity Value Chain Program in the Federal Capital Territory, Abuja, Nigeria. The result further shows that majority (70.8%) of the rice processors were married, while 14.7%, 7.9% and 6.7% of the rice processors were widows, single and divorced respectively in the study area. This implies that most of the rice processors were married and had certain level of dependency and responsibility which helps to motivate rice processors in adopting



technologies so as to increase their level of productivity and income in the study area. This finding is similar to that of Abubakar *et al* (2023) who in his study reported that majority of the rice processors were married. The result also shows that 42.0% and 30.0% of the rice processors had attended secondary and tertiary levels of education, while 15.4% and 11.3% of the rice processors had attended primary and Qur'anic levels of education. Only 1.3% of the rice processors had attended adult level of education in the study area. This implies that most of the rice processors had attended one form of education or another. This is a good indication that rice processors had attend formal education which makes it easier to understand the importance/implications of accepting improved technologies in rice processing in the study area. This agrees with the findings of Okunola *et al.* (2019) who emphasized that education is an important factor to facilitate the adoption of improved technology by increasing the farmer's knowledge and understanding of new farm practices in order to boost food production.

The finding further shows that 40.0% and 36.3% of the rice processors had a household size of 5-8 persons and 1-4 persons respectively while 11.7% and 12.0% of the rice processors had a household size of 9-11 persons and 12 persons and above in the study area. This indicates that most of the rice processors had a relatively large household size which is an indication that the rice processors have a cheap source of labour in the study area. This implies that labour accessibility is not a limitation in carrying out rice processing activities in the study area. The result also shows that 35% and 22.9% of the rice processors had 15-21 years and 22-28 years of rice processing experience, while 19.6%, 12.1% and 10.4% of the rice processors had 1-7 years, above 28 years and 8-14 years of rice processing experience respectively in the study area. This implies that most of the rice processors had a good number of years in rice processing which goes a long way in influencing adoption of improve rice processing technologies in the study area. This is in line with Kosheri (2016) who reported that processing experience matters more than merely the age when it comes to assessment and performance monitoring of intervention program, especially on rice processing.

The result also shows that more than fifty percent (52.9%) of the rice processors were farmers, while 27.0% and 20.0% of the rice processors were traders and civil servants in the study area. This implies that most of the rice processors were farmers, which indicates that rice production and supply is constant in the study area. The result further shows that majority (68.8%) of the rice processors used manual labour, while 31.2% of the rice processors used mechanical labour. This implies that most of the rice processors used manual labour which is attributed to the large household size of the rice processors in the study area. The result also shows that majority (68.8%) of the rice processors were members of rice processors organization, while 31.2% of the rice processors were not members of any organization in the study area. This implies that most of the rice processors belong to one organization or another in the study area, which helps in increasing their opportunity to access credits, receive inputs and obtain important and recent information concerning their processing activities in the study area. This agrees with Bamire *et al.* (2010) who found that interaction of farmers with other farmers is an avenue through which diffusion of innovation can occur. The result further shows that majority (55.0%) of the rice processors had access to extension, while 45.0% of the rice processors had no access to extension in the study area. This implies that more than half of the rice processors had access to extension which goes a long way in increasing their knowledge on improve rice processing technologies in the study area.



Table 2: Socioeconomic Characteristics of the women Rice Processors (n=240)

Variables	Frequency	Percentage	Mean
Age			
24-29	16	6.7	38
30-36	67	29.9	
37-42	57	23.8	
43-48	45	18.8	
49 and Above	55	22.9	
Household size			
1-4	87	36.3	7
5-8	96	40.0	
9-11	28	11.7	
12 and Above	29	12.0	
Years of processing experience			
1-7	47	19.6	12
8-14	25	10.4	
15-21	84	35.0	
22-28	55	22.9	
29 and Above	29	12.1	
Marital status			
Single	19	7.9	
Married	170	70.8	
Divorced	16	6.7	
Widow	35	14.6	
Educational level			
Tertiary	72	30.0	
Secondary	101	42.0	
Primary	37	15.4	
Adult Education	3	1.3	
Qur'anic	27	11.3	
Primary occupation			
Farming	127	52.9	
Trading	65	27.0	
Civil servant	48	20.0	
Type of labour			
Manual	165	68.8	
Mechanical	75	31.2	
Membership of organization			
Yes	165	68.8	
No	75	31.2	
Access to extension			
Yes	132	55.0	
No	108	45.0	

Source: Field Survey, 2024

Constraints to the Use of Improve Rice Processing Technology by the Respondents

The result from Table 3 shows the constraints faced by the rice processors in the study area. The finding shows that the major constraints faced by rice processors were High cost of technology, inadequate access to agricultural credits and complexity of some technologies which were ranked 1st, 2nd and 3rd respectively. These were followed by inadequate competent engineers, poor follow ups by extension agents and inadequate awareness which



were ranked 4th, 5th and 6th respectively. Others includes inadequate land and poor maintenance culture which were ranked 7th and 8th by the rice processors in the study area. This implies that most of the respondents despite their adoption of different improve rice processing technologies they were faced with certain constraints which could be eliminated or reduced to the minimum point among rice processors in the study area. This finding is similar to the findings of Issa et al. (2016) who also reported high cost of technologies as a major constraint to adoption of improved maize production practices in Ikara Local Government Area of Kaduna State, Nigeria.

Mwangi and Kariuki (2015) supported this finding stating that lack of credit opportunities relaxes the adoption decision of farmers and this is likely to influence the extent to which farmers can adopt improved technologies on their farms. Rice processors who have more access to credit are likely to adopt modern practices, all things being equal

Table 3: Distribution of the Respondents According to Constraints Faced by Rice Processors

Variables	Percentage*	Rank
High cost of technology	93.2	1 st
Complexity of some technologies	92.1	2 nd
Inadequate access to agricultural credits	81.4	3 rd
Inadequate competent engineers	76.6	4 th
Poor follow ups by extension agents	70.6	5 th
Inadequate Awareness	67.2	6 th
Inadequate extension contacts	55.4	7 th
Poor maintenance culture	35.9	8 th

Field Survey, 2024 *Multiple response

CONCLUSION AND RECOMMENDATION

The study concluded that the socioeconomic characteristics of the rice processors were mean age (38 years), mean household size (7 persons) and mean processing experience (12 years). Marital status (married) and educational level (secondary education). Major constraints of the women processors, includes high cost of technology (93.2%), complexity of the technologies (92.1%) and inadequate access to agricultural credits (81.4%). in the study area.

It is therefore recommended that Rice processors should pull resources and hire extension agents to educate them on improve rice processing technologies. Government should provide incentives and credits to rice processors in the study area. Non-governmental organization should provide agricultural extension advisory service to rice processors. Fabrication of local rice processing machines that could be affordable by the processors should be developed since the available once are too expensive and out of reach of small-scale processors

REFERENCES

- Abubakar, H. N., Umar, B. F., Gbanguba, A. U., Dauda, N. S., Garba, Y., Hamisu, S. and Abubakar, M. B. (2023). Adoption of Improved Rice Processing Technologies: A Case of Small-Scale Rice Processor Groups under IFAD - Value Chain Development Program in Niger. *Badeggi Journal of Agricultural Research and Environment*, **5**(01): 60-71.
- Adejoh, S.O., Madugu, N., and Shaibu, U.M (2017). An Assessment of the Adoption of Improved Rice Processing Technologies: A Case of Rice Farmers in the Federal Capital Territory, Abuja, Nigeria. *Asian Research Journal of Agriculture*, **5**(4): 1-9



- Adetimehin, O. D., Okunlola, J. O. and Owolabi, K. E. (2018). Utilization of Agricultural Information and Knowledge for Improved Production by Rice Farmers in Ondo State, Nigeria. *Journal of Rural Social Sciences*, **33**(1): 76–100. Retrieved on February 02, 2020 Available at <http://ir.muhas.ac.tz:8080/jspui/bitstream/123456789/1368/1/library>
- Bamire, S. A., Abdoulaye T., Amaza P., Tegbaru A. Alene A. D., and Kamara A. Y. (2010): Impact of Promoting Sustainable Agriculture in Borno (PROSAB) Program in Borno State of Nigeria. *Journal of food, agriculture and Environment*. **8**(3&4): 391-398.
- BSAD (2015). Bauchi State in focus.
- Ekundayo, B. P. (2023). Rice production, Imports and Economic Growth in Nigeria: An Application of Autoregressive Distributed Lag. *International Journal of advanced Economics*, **5**(2): 48-56.
- Henri-Ukoha, A., Orebiyi, J.S., Obasi, P. C., Oguoma, N. N., Ohajianya, D.O., Ibekwe, U. C. and Ukoha, II. (2011). Determinants of loan acquisition from the financial institutions by small scale farmers in Ohafia agricultural zone of Abia State, South-east Nigeria. *Journal of Development and Agricultural Economics*, **3**(2): 69-74.
- Issa, F. O. Kagbu, J. H. and Abdulkadir, S. A. (2016). Analysis of Socio-Economic Factors Influencing Farmers' Adoption of Improved Maize Production Practices in Ikara Local Government Area of Kaduna State, Nigeria. *Agrosearch*, **16**(2): 15-24.
- Kosheri, A. H. (2016). Analysis of Factors Affecting Adoption of Processing Technologies and Livelihood of Women Rice Processors' Groups in Katcha Local Government Area, Niger State, Nigeria-53.
- Mwangi, M. and Kariuki, S. (2015). Factors Determining Adoption of New Agricultural Technology by Smallholder Farmers in Developing Countries. *Journal of Economics and Sustainable Development*, **6**(5): 3–8.
- Obianefo, C.A.; Ezeano, I.C.; Isibor, C.A.; Ahaneku, C.E (2022). Technology Gap Efficiency of SmallScale Rice Processors in Anambra State, Nigeria. *Sustainability* **2023**, *15*, 4840. <https://doi.org/10.3390/su15064840>
- Okunlola, J. O., Ajileye, A. & Owolabi, O. (2020). Rural women involvement in post-harvest rice production activities in Ekiti State, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*. **38**: 100-105.
- Okunola, A. A., Adekanye, A. T., Adewumi, A. D. and Ashamu, F. F. (2019). Assessment of Rice Processing Operations in Ekiti State, Nigeria. *International Journal of Civil Engineering and Technology (IJCIET)*. **10**(2): 2197–2204.
- Statista (2022). Production of Milled Rice in Nigeria between 210 and 2021. Published by Doris DokuaSasu.<http://www.statista.com> May, 2022. Retrieved in August 21, 2022.
- USDA (2019). Improved Package of Practices for Rice Production. USAID markets. Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites, Abuja.