PERCEPTION OF CASSAVA PROCESSORS TOWARDS MODERN POST-HARVEST TECHNOLOGIES IN EKITI STATE, NIGERIA

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ABSTRACT

The study assessed the perception of cassava processors towards modern post-harvest technologies in Ekiti State. Multistage sampling procedure was used to select 120 respondents. Primary data were collected on socio economic characteristics, farmers' perception and constraints faced by cassava farmers towards adoption of modern post-harvest technologies. Data were collected with the aid of questionnaires and analysed using frequency count, percentage and mean. The result showed that the mean age of the respondents was 47 years, 70.8% were married and 84.2% had formal education. Majority (98.3%) of respondents were aware of mechanical grater. Majority (83.3%) of the respondents had a favourable perception towards adoption of modern-post harvest technologies, while 16.7% had an unfavourable perception about the technologies. Lack of scientific knowledge about modern post-harvest technologies ($\bar{x}$=1.21) was ranked first, while high cost of modern post-harvest handling technologies ($\bar{x}$=1.03) was the least constraint to the adoption of modern post-harvest technologies. The study concluded that lack of scientific knowledge about modern post-harvest technologies was the major reason why cassava processors have not adopted modern post-harvest technologies and recommends that Extension agents should actively disseminate information on improved postharvest technologies to farmers using mass media (e.g., radio/television) and farmer's groups.

Keywords: Post-harvest technologies, Farmers, Knowledge and Adoption

INTRODUCTION

Cassava (*Manihotesculenta*) is a starchy root crop that is mostly grown across West Africa. It is a native of South America that is largely cultivated in the tropics for its starchy and tuberous roots, which are utilised as food (Osuafor, Obianefo and Dike 2020; Adetarami, Olagunju, Adekola, Johnson and Akintola, 2022). Cassava is ranked 19th in the top crop production in the world, with total annual production at 269,125,963 metric tons (FAOstat, 2021). Nigeria is currently the largest producer of cassava in sub–Saharan Africa with an annual output of 59 million tonnes. According to Olutosin and Sawicka (2019), Nigeria's cassava production stands for 20.4% of the globe's total output since 2017. According to Igwe, Mbanaso, Okoye, and Imuse, 2018, the major producers are domicile in the North Central zone, closely followed by the South-South and South West zones. It is an important staple food crop produced for household consumption and cash crops required by industries for the production of flour which can further be used for food products like glucose for pharmaceutical products as well as food supplements to make alcohol and other beverages, animal feed, alcohol, starches for sizing paper and textiles, sweeteners, prepared foods, *Garri* processing and bio-degradable products (Oladeji, Neku, Olaore, O. M. and Fapojuwo 2022; Agricultural Research Council, 2021; Ani, Ojila, and Abu 2019).

It is one of the most perishable roots and tuber crops and can deteriorate within two or three days after harvest, leading to decreased income for farmers and limited availability of high-quality cassava products in the market. Due to this attribute, post-harvest processing is required within the shortest period so has to remove the poisonous substance called cyanogenic glucoside.

Cassava is mostly sold as a processed product unlike other roots and tubers crops which are sold in their fresh and raw state. Processing cassava root to other food forms creates products with longer shelf life, adds value to the root and reduces postharvest losses and is efficient in removing the poisonous substance *cyanogenic glucoside*. Poor processing, therefore, is a major cause of post-harvest losses in Nigeria, which may be due to some constraints such as lack of appropriate processing technologies by farmers. Poor processing could also be linked to, but not limited to lack of information, lack of access to credit and inadequate knowledge level of processing technologies. Cassava, being a perishable root and tuber that deteriorates within two or three days after harvest, requires post-harvest processing within the shortest period.

Traditional methods of cassava processing are often constrained by low quality, low output per unit of time, drudgery and low income for farmers. However, this method may not be efficient in removing *cyanogens* to safe levels. This is because physiological changes start within 24 hours after harvest with a blue-black discoloration commonly appearing on the root which results to poor utilisation, poor market quality, short root storage life and low processing yield. Hence, it crucial that cassava farmers acquire information about modern post-harvest technologies to improve efficiency, reduce losses and enhance the quality of cassava products. According to Olajide and Olonibua (2019) noted that for farmers to change from traditional production systems to a more advanced and commercialized system of production, it is crucial to have adequate agricultural information on novel post-harvest handling, packaging and storage techniques is of critical importance for successful

large-scale production and utilisation of cassava roots and products.

All these are towards maintaining product quality as well as reducing incidence of postharvest losses and, thereby, improve food security.

About 75% to 80% of Nigerians live in the rural areas relying on agriculture and yet spend high proportion of their income on food because of low production and processing level. Therefore, there is need to address the problems associated with traditional processing of cassava. This is crucial because of quick deteriorating attribute it possesses which necessitates the need for processing within the shortest period after harvesting to help remove the poisonous substance called cyanogenic glucoside and increase farmer's productivity. It is against this background that the study seeks to assess the perception of cassava farmers towards modern post-harvest technologies in Ekiti State.

The specific objectives were to:

1. describe the socio-economic characteristics of the respondents,
2. assess farmer's perception towards modern post-harvest technologies, and
3. identify the constraints faced by cassava farmers towards adoption of modern post-harvest technologies.

METHODOLOGY

The Study Area is Ekiti state. The state is in the southwestern part of Nigeria between latitude 7.667^0N and longitude 5.20^oE. It has a total land area of 6,353km^2. The major economic activity of the study area is predominantly farming. They grow food (yam, rice, cassava, plantain, and cocoyam) and cash crops (cocoa, kolanut and palm oil).

The population of the study consists of all the cassava farmers in Ekiti State. A multistage sampling procedure was employed in the selection of 120 cassava farmers in the study area. In the first stage, random selection of three Local Government Areas (Ado LGA, Ikole LGA and Oye LGA), this was followed by selection of four communities each from the selected local government, making a total of twelve communities. The final stage involved random selection of 10 cassava farmers from each community to arrive at a sample size of 120 respondents for the study. Primary data were collected with the aid of questionnaires and analysed descriptively using frequency count, percentage and mean. Cassava farmers' perception towards the adoption of modern post-harvest technologies was measured on a 5-point Likert scale of Strongly Agreed (SA) = 5, Agreed (A) = 4, Undecided (U) = 3, Disagreed (D) = 2, Strongly disagreed (SD) = 1. Twelve perception statements items were provided for the respondents. The maximum and minimum score for an individual respondent was 60 and 12 respectively. The cut-off mean was calculated as (1+2+3+4+5)/5 = 3. However, any mean scores >3 were categorized as cassava farmers with favourable perception and those with mean scores <3 were considered as those with unfavourable perception towards modern post-harvest technologies. Data collected were analysed using frequency counts, percentage and mean. These were presented using tables and charts.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The result of the socio-economic characteristics of the respondents in Table 1 reveals that the mean age of the respondents was 47 years, implying that majority of the respondents were adults who need to adopt modern technologies to reduce the stress associated with cassava processing. This conforms with the findings of Olayemi *et al.,* 2019), who opined that most of the cassava processors in Ekiti State were adults compared to youths which were fewer in number. Majority (71.7%) of the respondents were female. This is in line with the view of Otubo, 2021), who noted that female dominates in the processing of cassava. In addition, the majority (35.8%) of the respondents had secondary education, and 15.8% had no formal education. According to Alabi *et al.,* (2019), education has an important role to play in an individual's life; it predisposes the individual to innovation and acquaint them with various knowledge. Hence, educated processors know the reasons why they should adopt modern technologies. Most of the respondents (36.7%) had farming experience of between 11-20 years, and 8.3% had 31 years experience and above. This implies that most of the cassava processors have enough farming experience, which is sufficient for them to know the importance of modern processing technologies over traditional methods. Results also indicate that the respondents' mean monthly income was N 15,000 (24 dollars). This implies that most of the cassava processors do not have enough and sufficient income from processing their cassava (their income is low) which signifies the need to adopt modern post-harvest technologies to increase their income. The adoption of modern post-harvest technologies will greatly increase the income of cassava processors (Ademiluyi, Adepoju and Okeke-Agulu 2017: Ajayi and Olutunmise 2018).

Table 1: Socio-Economic Characteristics of the Farmers

Variables		Frequency	Mean
Sex	Male	34 (28.3)	
	Female	86 (71.7)	
Age	16-30 years	9 (7.5)	47 years
	31-45 years	36 (30.0)	
	46-50 years	52 (43.3)	
	61-75 years	23 (19.2)	
Marital status	Single	11 (9.2)	
	Married	85 (70.8)	
	Divorced	6 (5.0)	
	Widowed	18 (15.0)	
Education	Primary	23 (19.2)	
	Secondary	43 (35.8)	
	Tertiary	35 (29.2)	
	No formal education	19 (15.8)	
Farming experience	0-10 years	43 (35.8)	19 years
	11-20 years	44 (36.7)	
	21-30 years	23 (19.2)	
	31 years and above	10 (8.3)	
Monthly income	N5000 - N 15000	50 (41.7)	N 15,000
	N16000 - N25000	40 (33.3)	
	N 26000 - N35000	12 (10.0)	
	N36000 - N45000	18 (15.0)	

Note: Percentages are in parentheses

Cassava farmers perception towards adoption of Modern Post-Harvest Technologies

The result in Table 2 describes farmer's perception towards adoption of modern post-harvest technologies. Majority (79.2%) of the respondents strongly agreed that modern technologies were too expensive, and this can be one of the reasons why they have not adopted these technologies. This conforms to the findings of Otubo (2021) who noted that the high cost of modern post-harvest technologies is part of the reasons why cassava processors have not adopted modern post-harvest technologies. Majority (63.3%) of the respondents do not know if modern technologies will reduce post-harvest losses of fresh cassava and this is because they have not tried the modern technologies.

Table 2: Table 2: Cassava Farmer's Perception towards adoption of Modern Post-Harvest Technologies

Perception statements	SA %	A %	U %	D %	SD %
Modern technologies are not labor intensive	59.2	35.8	4.2	0	0.8
Modern technologies are too expensive	79.2	18.3	0	1.7	0.8
Technologists were not available to operate the technologies	32.5	48.4	10.0	8.3	0.8
Modern technology encourages increased output from processing	22.5	55.8	20.8	0	0.8
Modern technologies result in reduced processing time	59.2	37.5	1.7	0.8	0.8
Traditional is better than modern technology	9.2	35.0	38.3	12.5	5.0
Modern technology results in reduced stress and labour	44.2	52.5	2.5	0	0.8
Modern technologies remove the hydrogen cyanide better than traditional	0	3.3	46.7	41.7	8.3
Modern technologies help to reduce post-harvest losses of fresh cassava	0	0.8	63.3	31.7	4.2
Modern technologies help to improve the taste of cassava products	8.3	18.3	45.8	18.3	9.2
Modern technologies can lead to mechanical damage of cassava	0	1.7	6.7	11.7	80.0
Modern technology helps to add value to cassava products	0.8	4.2	25.9	35.8	33.3

SA - Strongly Agreed; A - Agreed; U - Undecided; DA - Disagreed; SD - Strongly Disagreed

Most (59.2%) of the respondents strongly agreed that the adoption of modern technologies will result in reduced labour and processing time which will serve as a reason for the farmers to adopt modern technologies. This is in accordance with the view of Ajayi and Oluntumise (2018) that the application of modern cassava post-harvest technologies will result in reduced processing labor. This is also conformed with the findings of Nwaru and Anyaegbunam (2018) who noted that application of improved processing technology results in reduced processing time and which in turn encourages increased output from processing.

Most (55.8%) of the respondents agreed that adoption of modern technology will encourage increased output from processing. Above average (52.5%) of the respondents agreed that adoption of modern technologies help to reduce stress and labor. Also 48.3% of the respondents agreed that technologists were not available to operate the technologies, and this could be part of the reasons why they have not adopted the technologies.

Categorisation of cassava farmer's perception towards adoption of modern post-harvest technologies

Table 3 shows that majority (83.3%) of the respondents had a favourable perception towards adoption of modern-post harvest technologies while 16.7% had an unfavourable perception about the technologies. This implies that the prospect of adopting cassava modern post-harvest technologies is very high in the study area provided the constraints faced are address accordingly.

Table 3: Categorization of Cassava Farmer's Perception towards adoption of Modern Post-Harvest Technologies

Variables	Frequency	Percentage	Maximum	Minimum
Favourable	100	83.3	60	12
Unfavourable	20	16.7		

Constraints Faced by cassava processors in the Adoption of Modern Post-Harvest Technologies

Table 4 shows the constraints faced in the adoption of modern cassava post-harvest technologies. Lack of scientific knowledge about modern postharvest technologies ($\bar{x} = 1.82$) was ranked first as one of the major constraints in the adoption of post-harvest technologies. This is in accordance with the assertion of FAO (2010) which denotes that one of the major problems why cassava processors have not adopted the modern post-harvest technologies is because they do not have adequate knowledge about modern post-harvest technologies. This was closely followed by lack of conviction about cassava modern technologies ($\bar{x} = 1.71$). Otubo, 2021 and Ewebiyi *et al*., (2020) opined that most of the cassava processors are aware and convinced about these technologies but have not adopted it due to the high cost of the modern post-harvest technologies and lack of information.

Lack of skill and inadequate labour ($\bar{x}$=1.19) was ranked as the third constraints on the adoption of cassava modern technologies. This is in line with the findings by Chimela and Ajanaku (2019) who observed that one of the constraints faced by cassava processors in the adoption of modern post-harvest technologies is the lack of skills on modern post-harvest technologies. In addition, lack of guidance and training ($\bar{x}$=1.12) was another constraint faced in the adoption of cassava modern post-harvest technologies. This is in line with the findings by Olayemi (2019) that one of the problems why cassava processors have not adopted post-harvest cassava technologies is because they are not being guided and trained about the post-harvest technologies. High cost of cassava modern post-harvest technologies and economic constraints were the least constraints in the adoption of modern post-harvest cassava technologies. This is in line with the assertion of FAO (2018) who denote that one of the major constraints why cassava processors have not adopted the modern post-harvest technologies is because of the high cost of these technologies which the cassava processors cannot afford.

Table 4: Constraints in the Adoption of Modern Post-Harvest Cassava Handling Technologies

Variables	Mean Rank
Lack of scientific knowledge about modern post-harvest technologies	1.82 1st
Lack of conviction about modern post-harvest handling technologies	1.71 2nd
Lack of skill and inadequate labor	1.19 3rd
Lack of technical guidance and training	1.12 4tth
High cost of modern post-harvest handling technologies	1.03 5th
Economic constraints	1.03 5th

CONCLUSION AND RECOMMENDATIONS

The study concluded that cassava processors had a favourable perception about modern post-harvest cassava technologies, the constraints encountered by cassava processor were lack of scientific knowledge, lack of capital, lack of

skills and conviction about modern post-harvest technologies. The study therefore recommended that farmers should pool their funds through joint contribution. Such funds can be used to purchase the costly postharvest and storage facilities, Extension agents should actively disseminate information on improved postharvest technologies to farmers through use of mass media (e.g., radio/television) and farmer's groups. Also, the adoption potentials of the respondents can be enhanced if limitations of post-harvest technologies are addressed accordingly by the government and various stakeholders.

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