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ANALYSIS OF TRAINING NEEDS OF CASSAVA PROCESSORS IN NASARAWA STATE, NIGERIA

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Abstract

This study examined training needs of cassava processors in Nasarawa State, Nigeria. The specific objectives were to: (i) describe characteristics of cassava processors; (ii) determine the perceived knowledge level of processors on improved methods (iii) identify areas of training needs to cassava processors. Sampling technique was used to select 120 respondents from the list of contact cassava processors retrieved from Nasarawa state Agricultural Development Programme. A purposive selection of 2 Local Government areas from Nasarawa state based on their prominence in cassava processing, from each of the Local Government areas, 2 communities were randomly selected. The study revealed that: mean age of the cassava processors in Nasarawa was 37years. A majority of the cassava processors in Nasarawa (84.2%) were females, most (79.2%) of the processors in Nasarawa had one form of education or the other, average year of cassava processing among cassava processors in Nasarawa was 6 years, the knowledge level of respondents on cassava processing skills was low (Mean=1.86) in Nasarawa State, the major areas of training needs were maintenance of equipment skills (mean=7.17) and handling/packaging of processed products (Mean=7.37).The study concluded that cassava processors in Nasarawa state required training in the maintenance of equipment skills, handling/packaging of processed products, safety procedure/precautionary measure, selection of tuber varieties suitable for product, credit acquisition and knowledge of environmental protection. It was therefore recommended, that cassava processors in Nasarawa State should be trained in the needed areas.

Keywords: Cassava, processors, training needs, Value addition

Introduction

Nigeria is blessed with a large expanse of land spanning from the coast to the Sahel which allows a wide range of crops and livestock production. The northern part is suitable for the production of cereals and grain legumes like sorghum, millet, maize, cowpea, groundnut, cotton, and sesame. The southern part supports the production of roots and tubers such as yam, cassava, cocoyam, and plantain. In the flooded parts of the south, swampy rice is grown while in the middle belt, cereals, grain legumes, yam, and cassava are grown (Adegeye, 1993).Cassava (*Manihot esculenta*) is a major staple food in Nigeria, eaten either unprocessed or in processed form. According to Nyerhovwo (2004), eighty per cent of Nigerians residing in the rural areas and they eat a cassava meal at least once a day. When compared with rice and maize, cassava has a carbohydrate content which is about 40% higher than rice and 25% more than maize. Also, it is the cheapest source of calories for human consumption. Hence, cassava plays a major role in the country's food security. Cassava is a major root crop grown by farmers throughout Nigeria for cash, food, feed and raw material for agro-allied firms (Onwumere, *et al.*, 2006; Francisco, 2004). The prominence of cassava on the national agricultural profile of Nigeria could be seen in the fact that it is efficient in the production of energy required by humans and is suitable for the present farming system in Nigeria (Olakulehin and Ajiola, 2005).According to IITA(2002), Nwokoro *et al.,* (2007) and Adekunle (2013), the characteristics of the common forms of cassava products available for human consumption in Nigeria include gari, fufu, cassava chips, cassava flour, starch, farina, tapioca, macaroni, cassava bread, and pudding.Cassava processing activities are widespread in the rural areas being the most formal processed crop in the Southern and Middle Belt areas of the country (Oni, 2005; TARCA, 2005).Nature and stress involved in the processing activities of cassava

make both men and women a significant contributor in the industry (Omolehin et al., 2007). Nweke *et al.,* (2002) identified two broad methods of cassava processing, namely traditional and mechanized processing. Nweke *et al.,* (2002) further found that both methods had constraints including compromised product quality, reduced efficiency in labour and cost of production.

Nigeria is the world largest producer of cassava with about 38 million metric tonnes per annum ahead of other producers like Brazil and Thailand (Akinwumi and Yusuf, 2003; FAO, 2004; Ashaye *et al.,* 2005). Cassava cultivation is mostly done by farmers in southern and middle belt areas of the country. The major constraint of cassava production is a rapid deterioration of the roots after harvest. Cassava roots have a shelf-life of 24–48 hours after harvest (Stephen and Eric, 2009; Nyerhovwo, 2004). Once harvested, it has to be either consumed immediately or processed into more stable product forms. Fresh roots must be processed within 2 to 3 days from harvest in order to reduce losses and eliminate its cyanogenic glucosides (Nweke, 2003; Ndaliman, 2008). Losses in cassava processing as reported by Olanrewaju *et al.,* (2014) are about 23% for local centers and 17% for improved technology centers. These losses occur during all stages of the processing as presented in figure 1.

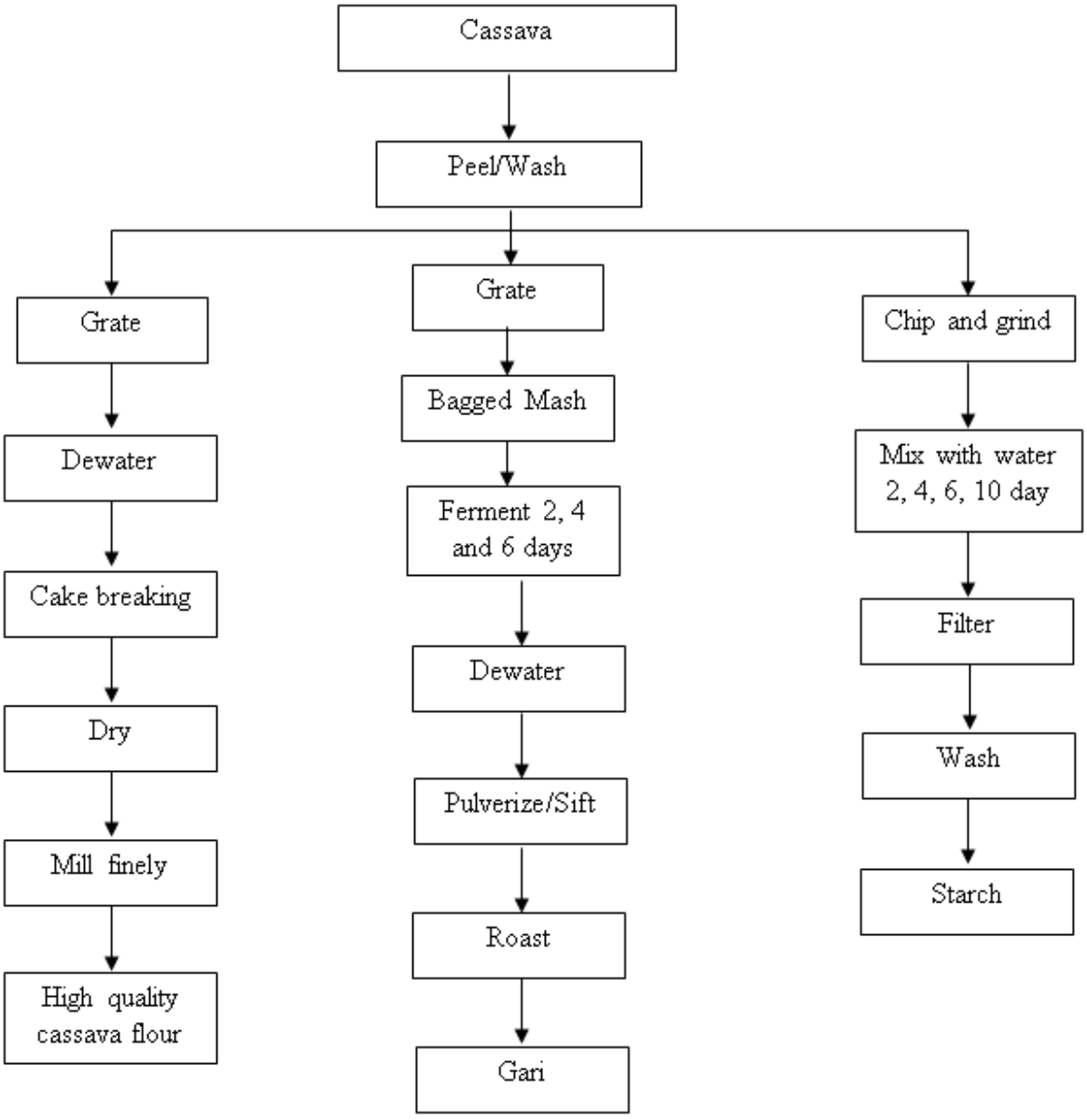


Fig. 1: Flow chart of cassava processing stages into different final produce

Ekong (2003) stressed that agro-processing can play a deliberate role in growth strategies in the rural economy because earnings from it account for 30 - 45% of rural household income. Also, Olanrewaju *et al.,* (2014) reported that cassava processing is prominent in the traditional scale, subjecting the processing to a number of undesirable attributes which are time-consuming, low yields and lack of storage

capacities. The need for innovative cassava processing technologies is enormous to improve human capacity, leading to intensification and increase in production. Despite the economic potential in agro-processing, cassava processors in Nigeria are plagued with several challenges, hence, this study, therefore, sought to ascertain the socio-economic characteristics of cassava processors, determine the perceived knowledge levels of processors on improved cassava processing methods and identify the training needs of cassava processors. The study hypothesized that there is no significant relationship between socioeconomic characteristics of processors and their training needs in Nasarawa states.

Materials and Methods

The study was carried out in Nasarawa State. Nasarawa state is located centrally in the middle belt region of the country and lies between latitude 7º45´ and 9º25N´ of the equator and between longitude 7º and 9º37´E of the Greenwich meridian (Adeyemi, Oloyede, and Oladiji, 2007). The state covers a total land area of 27,290km^2. It has a population of over two million people (2006 National Census). It is predominantly rural with agriculture as its main economic base. Its proximity to Nigeria's Capital Territory and the City of Abuja has a lot of impact on its people and landscape.The population of the study comprised all cassava processors in Nasarawa State. A three stage sampling technique was adopted to select 120 respondents from the list of contact cassava processors retrieved from Nasarawa State Agricultural Development Programme (ADP). The first stage was a purposive selection of 2 Local Government areas from the state based on their prominence in cassava processing. Secondly, 2 communities were randomly selected from each of the selected LGAs. The third stage was also a random selection of 30 cassava processors from each community making a total sample size of 120. Data was collected through structured interview schedule and analyzed with both descriptive and inferential statistics including frequency counts, percentages, means, and multiple regressions.

Results and Discussion

Socio economic Characteristics

Results of data analysis presented in Table 1 reveal that 52.2% of the processors in Nasarawa had their age between 31 to 40 years and the mean age was 37 years. This showed that a majority of cassava processors in the Nasarawa States are in their middle age and the younger generations were noticed to be actively involved in cassava processing; a good implication on their productivity, as they are able to put maximize the labor required in cassava processing. This is in line with studies of Odebode and Arimi (2008) and Ogunleye *et al.* (2008) who found that majority of cassava processors are in their active years. Most (87.5%) of the cassava processors in Nasarawa were married and only 3.3 % were singles, 6.7 % were divorced while the remaining 2.5% were widowed. This implies that married processors dominated the study area. This means that the cassava processors in Nasarawa state where the population of people who are likely to have an additional household responsibility with the advantage of using family labour for cassava processing. Ogunjimi *et al.* (2012) reported that the marital status of a farmer could have a significant influence on production decisions. They opined that in African traditional society, married men are considered to be more responsible since it is assumed that a person having a family would want to have the best results that would translate to more output and consequently, income to meet family needs.

Also, results in Table 1 showed that most (84.2%) of the processors in Nasarawa were females and 15.8% were males. This finding implies that cassava processing in Nasarawa state is dominated by female processors. This finding is consistent with Achem and Akangbe (2007) who had earlier found that most cassava processors in Kwara State were female.58.3% were Muslim and 35.8% were Christians among processors, an indication that Muslims are into cassava processing than Christians. This may be attributed to reasons that include geographical location and dominating religion in the states. Similar findings had been observed by Ajepe, *et al.* (2016) who found that above 90 per cent of their respondents participating in Agro processing value chain enterprise in Kwara state had religion affiliation as Islam. 20.8% of the processors had no formal education, 32.5% had adult education, 39.2% completed primary education and 7.5% had a secondary education but not 0.0% was found with post-secondary education. This finding is similar to the study of Oluwasola (2010) who discovered that cassava processors in Oyo state also have a low level of education.

It was observed that a majority (95.0%) of the respondents has cassava processing as their main occupation, only 2.5% indicated trading and mechanic

as their primary occupation. The occupational distribution of the respondents implies that cassava processing is the main activities among processors in the study area. The household size of respondents in study area showed that25.0% of cassava processors had a household size of less or equal to 5 persons, 47.5% of the processors had between 6-10 persons, 17.5% of the processors had a household of 11-15 persons and 10.0% of the processors had a household of between 16-20 persons. The average household size of processors in Nasarawa was approximately 9 persons. The majority (89.2%) of the respondents had their year of experience between 1 to 5 years, only 9.2% had between 6 to 10 years, 0.8% had between 11 to 15 years. The average year of cassava processing among cassava processors in Nasarawa was 6 years.

Table 1: Socio-Economic Characteristics of Cassava Processor in the study areas

	Nasarawa State (N=120)	
Variables	Frequency	Percentage
Age (years)		
30 and below	24	20.0
31-40	63	52.5
41-50	19	15.8
Above 50	14	11.7
Mean score (Std. Dev.)	**36.70** (11.032)	
Single	4	3.3
Married	105	87.5
Divorced	8	6.7
Widowed	3	2.5
Gender		
Male	19	15.8
Female	101	84.2
Religion		
Islam	98	81.7
Christianity	21	17.5
Traditional	1	0.8
Level of Education		
No Formal Education	25	20.8
Adult Education	39	32.5
Primary Education	47	39.2
Secondary Education	9	7.5
Tertiary education	0	0.0
Household size (persons)		
1-5	30	25.0
6-10	57	47.5
11-15	21	17.5
16-20	12	10.0
Mean score (Std. Dev.)	**8.58** (4.897)	

Primary Occupation		
Cassava Processing	114	95.0
Trading	3	2.5
Farming	0	0.0
Mechanic	3	2.5
Student	0	0.0
Cassava Processing Experience (years)		
1-5	26	21.7
6-10	92	76.7
11-15	1	0.8
16-20	1	0.8
21-25	0	0
Mean score (Std. Dev.)	**6.20** (7.084)	

Source: Field survey, 2015

Perceived Knowledge of Cassava processors on cassava processing skills in Nasarawa State

The level of knowledge among cassava processors is presented in table 2. As revealed in the table, the area where processors in Nasarawa state processors had high knowledge were Skill for operating processing machine (mean= 2.35), selection of varieties suitable for product processing (mean=2.57) and link to buying agent and market (mean=2.63). Low level of knowledge was found in the procedure for credit acquisition (mean=1.64), equipment purchasing process (mean=1.72), value added products processing (mean=1.18), equipment maintenance (mean=1.18), and packaging (mean=1.42).This finding corroborates the study by Davies, Olatunde, and Burubai (2008) that found that cassava processing machines Oyo state had been abandoned as a result of untrained machine operators for maintenance

Table 2: Perceived Knowledge of Cassava processors on cassava processing skills in Nasarawa State

S/No.	Cassava processing Skills	NK	AK	AAK		
		Freq. (%)	Freq. (%)	Freq. (%)	Mean (Std. Dev)	Decision
1.	Skill for operating processing machines	9 (7.5)	60 (50.0)	51 (42.5)	**2.35** (.617)	**High**
2.	Selection of varieties suitable for cassava processing	12 (10.0)	28 (23.3)	80 (66.7)	**2.57** (.670)	**High**
3.	Procedure for credit Acquisition	63 (66.7)	37 (%)	20 (16.7)	**1.64** (.754)	Low
4.	Link to buying agent and Market	7 (5.8)	30 (25.0)	83 (69.2)	**2.63** (.593)	**High**
5.	Equipment purchasing Process	52 (43.3)	50 (45.8)	18 (15.0)	**1.72** (.712)	Low
6.	Value added products Processing	101 (84.2)	16 (13.3)	3 (2.5)	**1.18** (.449)	Low
7.	Equipment maintenance skill	87 (72.5)	20 (16.7)	13 (10.8)	**1.38** (.676)	Low
8.	Packaging	78 (65.0)	34 (28.3)	8 (6.7)	**1.42** (.616)	Low
	Grand mean				**1.86**	Low

Note: NK = No knowledge, AK = Average Knowledge, AAK = Above Average Knowledge

The bench mark for knowledge level has a mean score = 2.00. **Decision rule:** Mean score = 2.0 and above (High knowledge), mean score = 1.99 and below (Low knowledge).

Training Need Analysis (TNA) of Cassava Processors in Nasarawa State

The areas where training are needed among cassava processors in Nasarawa state were: maintenance of equipment skills (mean=7.17), improved skill for handling and packaging of processed products (total mean = 7.37), knowledge of safety procedure and precautionary measure (total mean=7.19), skill for selection of tuber varieties suitable products (total mean=7.51), credit acquisition skill (total mean=7.53), and knowledge of environmental protection (total mean=7.18) (Table 3).

Table 3: Training Need Analysis (TNA) of Cassava Processors in Nasarawa State

Cassava processing Task	Mean of Frequency of Performance	Mean of importance	Mean of difficulty	Total Mean Score	Focus/Remark
Nasarawa State Operations	3.19	2.38	1.52	7.09	Training Not needed
Maintenance	2.48	2.43	2.26	7.17	Need Training
Handling and packaging of processed product	2.70	2.58	2.09	7.37	Need Training
Safety procedure	2.82	2.43	1.94	7.19	Need Training
Selection of varieties suitable	3.26	2.14	2.11	7.51	Need Training
Link to buying agent and market	2.18	2.43	2.43	7.04	Training Not needed
Skill for operating processing machine	1.96	2.43	2.51	6.9	Training Not needed
Credit acquisition	2.20	2.18	3.15	7.53	Need Training
Equipment purchasing process	2.19	2.29	2.38	6.86	Training Not needed
Environmental protection	2.71	2.61	1.86	7.18	Training Not needed
Preservation	2.80	2.57	1.83	7.2	Training Not needed
Packaging and storage	2.67	2.52	1.84	7.03	Training Not needed
Marketing	2.63	2.42	1.86	6.91	Need Training
Threshold value				***7.15***	

Source: Field survey, 2015

Regression Analysis

The result of regression analysis presented in Table 4 to identify seven socioeconomic determinants of cassava processors' knowledge level of processors for processing skills in Nasarawa state produced an R^2 value of 0.526. This implies that the variables accounted for 52.6% of the observed variations in determining the knowledge level cassava processors in Nasarawa state.

Specifically, the Table reveals that gender (t=-7.671; $p \leq 0.01$) was inversely significant to the knowledge on cassava processors in Nasarawa state while household size (t=2.350 at $p \leq 0.05$) was positively significant to the knowledge level cassava processors in Nasarawa state. Hence, the null hypothesis was rejected and the alternative was accepted. This further implies that the higher the household size of respondents, the greater the knowledge level on cassava processing of the respondents.

Table 4: Result of themultiple regression analysis of the relationship between the socioeconomic characteristics of the cassava processors and their knowledge oncassava processing skills in Nasarawa state

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients Beta	T	Sig.
(Constant)	2.050	.071		28.803	.000
Age	.002	.002	.139	.859	.392
Educational status	.006	.023	.038	.250	.803
Marital status	.055	.038	.173	1.444	.151
Gender	-.272***	.035	-.717	-7.671	.000
Household size	.011**	.005	.377	2.350	.021
Years of processing experience	.006	.006	.109	.974	.332
Years of association membership	.001	.001	.054	.748	.456
Dependent Variable: Knowledge level on processing skills					
R = .725					
R Square = .526	**= 52.6%**				
Adjusted R Square = .496	**= 49.6%**				
Std. Error of the Estimate = .09883					
F-Statistics = 17.730					
Sum of square residual = 1.094					

Note: *** Significant at 1%; ** Significant at 5%

Conclusion and Recommendations

The findings of the study revealed that cassava processors in Nasarawa state were found to have low knowledge in credit acquisition procedure. The majority of the Cassava processors in Nasarawa State were found to be female. Knowledge of value added products processing and maintenance of processing equipment were found to be low. Extension packages for cassava processing should incorporate technologies for value-added cassava products, maintenance culture for equipment and regular visits by agricultural extension agents for quick adoption of improved cassava processing technologies should be enhanced.

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