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# Rural Women Processing Cassava in Doma Local Government Area of Central Nigeria Deserve Technical Assistance

Bello, M[1]; E. P. Ejembi[2], E. Allu[1], and Anzaku T. A. K[3].
1. Department of agricultural Economics and Extension, Nasarawa State University, Keffi
2. Department of Agricultural Extension and Communication, University of Agriculture, Makurdi.
3. College of Agriculture, Lafia, Nasarawa State.
*E-mail of the Corresponding Author: elmu457@yahoo.com

**Abstract**
The study was conducted in Doma Local Government Area (DLGA), of Nasarawa State in Central Nigeria. The local government area is prominent for the production of cassava tubers and is made up of five districts. There are a total of 10 villages in the five districts. Ten women participating in cassava processing in each village were randomly selected making a total of 100 respondents for the study but only 73 of them were finally used for the study. Data were subjected to descriptive statistics involving means, frequencies and percentages. The finding of the study was that 84.0 percent of the respondents claimed non-existence of modern processing technologies recommendation in the study area. Efforts should be intensified by relevant authority to persuade researchers to develop appropriate processing technologies commensurate with literacy level, skills of the processors and for the extension system organization to develop appropriate work-plan for the women processors with the view to minimizing their most pressing constraints.
**Keywords:** Doma Local Government; cassava chips, flour, Gari, Starch, flow chart,

## 1. Introduction

Cassava is one of the most important food items available in Nigeria and the whole of West Africa. It is a popular product because it is cheap and easy to produce in all tropical regions. It is found to be extremely tolerant to environmental stress which makes it suitable for present farming and food system in Africa. Research has shown that cassava is a leading root crop in developing countries (Bunmade, 1990). According to him, major aims of processing cassava are to check subsequent losses and enhance palatability and other sensory attributes.

FAO (2004) described cassava processing in Nigeria at five levels. Common terms used to describe these capacity levels were household (or cottage), micro, small, medium and large. House-hold level processing typically did not employ any outside labour. The household consumed virtually all the processed products and sold a small amount to raise income for additional household needs. According to FAO (2004) most Nigerian processors fell within this category. At micro processing capacity the employment of one or two units of labour might take place while processing a variety of products. This enterprise used batch processing. Batch processing might take four hours per day and this would be sufficient for the owner/operator. Nigeria had a few processors in this category. The Small and medium processing operations typically employ three to ten workers and were very sparse in Nigeria at present. Large scale processing was virtually non-existent in Nigeria.

Household or Traditional cassava processing, according to IITA (2004), had a number of undesirable attributes. It was time-consuming, provided low yields, and lacked storage capabilities. Kwaitia (1986) indicated that drying of fresh cassava roots or dewatered pulp was normally carried out traditionally using solar heat. Two problems, according to him, were associated with the sun-drying: sanitation, since the materials were often spread on the ground to dry; and difficulties in drying during the rainy season.

Uzu (2004) reported that cassava root shape varied among cultivars. He believed that roots with irregular shapes were difficult to harvest and peel by hand resulting in great losses of useable root materials. He further believed that varietal differences in dry mater content and starch content and quality influenced the output and quality of the processed products. Cyanide content also varies with varied. Uzu (2004) maintained that agronomical factors could affect crop yield and processing qualities.

As part of IITA (2004) cassava mosaic disease (CMD) project, initiative was put forward for the collection of needed data on processing technologies and equipment. Bench-marks were needed to measure the progress of the cassava industry. It was known that small-scale operators using low level technologies did process, but their needs, capacity or the intended benefit from moving to higher levels of technology were not known.

Uzu (2004) agreed that the quality of certain cassava products could be compromised through traditional processing methods, based on the crude and unhygienic ways they were replaced. Such values, according to him, included elimination of IICN through extended fermentation or water expression methods. If these processes were replaced, he observed, through the introduction of new technologies, there might be a need for research on how to improve the protein value, the aroma, the taste of cassava products without necessarily changing the

 

desired quality or increasing the cost of the products.
According to IITA (2004), engineering research in Nigeria and other African countries resulted in successful mechanization of some of the labourious and time-consuming cassava processing operations. Current research efforts was still on the Universities and National/International research institutes in Africa aimed in improving the material and sensornic qualities of cassava, producing more food varieties from the crop, reducing the labour and time involved in processing and minimizing cost of processing. In spite of the foregoing efforts, Bunmade (1990) maintained that although research work was going on to improve cassava storage, it would still appear that traditional processing was best alternative as of the time. Also Nasarawa Agricultural Development Programme (NADP) (2004) reported that manual processing, using rudimentary tools or traditional method was still the order of the day in the study area.
Women farmers in the study area were known for the production, processing and marketing of cassava root. Through traditional method, cassava roots were processed into various products for both human consumption and industrial requirements. There were increased demand for processed cassava products such as chips/chunks, flour, gari, starch and others. Nigeria was recognized as one of the leading producers of cassava in the world, since 2002 (FAO, 2004).
However, in spite of the various uses of cassava products for industrial, animal and human consumption, occasioned by fluctuation in production, poor producers prices and inadequate storage facilities became permanent features of this sector of Nigeria's agriculture. Furthermore, inadequate, affordable modern equipment for poor rural women for the processing of cassava couple with a weak extension service, and unavailability of processing technologies constituted major constraints to cassava processing in the study area. The questions this study attempted to answer were: What were the constraints associated with cassava processing among women? What were the socio-economic characteristics of women participants in cassava processing? What were the method(s) used in cassava processing? What were the available improved processing technologies?
*The Specific Objectives of the Study were to:*

a. Identity the socio-economic characteristics of women processing cassava in Doma LGA.
b. Identity traditional (household) methods of cassava processing by women in Doma LGA.
c. Determine availability of modern processing technologies and the extent to which such technologies satisfied the processing needs of women participants.
d. Identify constraints associated with cassava processing among women.

**Methodology**
*Study Area*
The area selected for the study was Doma Local Government Area (DLGA) of Nasarawa State. Doma LGA is located at Southern zone of Nasarawa Agricultural Development Programme (NADP) and is prominent for the production of cassava. Doma the capital of the DLGA is 22km West of Lafia, the state capital with latitude $0.9^0$ 33'N and longitude $0.9^0$ 32'E. DLGA has distinct wet (March – October) and dry (November – February) seasons. Average annual rainfall of the study area is appropriately 107.6mm and high temperature throughout the year of annual mean range of $22.7^0$ to $36.8^0$ (Metrological Department, 2005). The soil texture is sandy loam which supports the production of crops such as cassava, beniseed, yams melon, rice, millet, groundnut, maize and sorghum. The local government area has population of 139,607 people (NPC, 2006). Ethnic groups in the area include Alago, Agatu, Migili, Eggon, Bassa, Tive, Hausa/Fulani and Mada. DLGA shared border with Lafia, Keana,, Keffi and Kokona to the East, East-South, South West, West respectively.
*Sampling Selection*
A random sampling of 100 women was made from ten (10) villages of the study area. However, 27 of the selected women declined interviews for fear of being intimidated by members of their communities. Data were subjected to descriptive statistical analysis involving means, frequency counts and percentage.

**Results and Discussion**
*Socio-economic Background of Women Processors*
All processors surveyed were female and most (84.9%) of them married (Table 1). Mean age of the women involved with the cassava processing activities was 45 years, implying that women processors were of middle age. This implied young and able-bodied women were largely involved in cassava processing activities. Average family size was 8 and regarded as moderate. Many (58.9%) of the respondents had no formal education and were, therefore, illiterate. Such low level education status of the respondents had implication for adoption of modern technology. Mean monthly income from cassava processing was N1910. According to Makinwa-Adebusoye (1991) income level of women was low by any standard within the country irrespective of location and the growth of such income levels was similarly low. Agbamu et. al, (1996) opined that the poor economic

 

status of most Nigerian farmers had inhibited the adoption of most agricultural technologies, since innovation perceived as advantageous may not be adopted because of the cause.

*Method of Cassava Processing Adopted by Women Processors in the Study Area*

Distribution of processing methods adopted by the respondents is shown in Table 2. Most (93.2%) of the respondents employed traditional method of processing cassava in the study area. Results of the study implied that women processors were primarily involved in traditional cassava processing described as labourous, time consuming, low yielding and lacking storage facilities (IITA, 2004). Traditional processing method of cassava as observed in the study area involved a combination of activities which were performed in stages such as peeling, pressing, steaming, slicing, grating or seeping, fermenting, roasting, drying and milling. The combination of these activities varied with products made from the cassava roots. Flow charges identifying various traditional methods of cassava processing in the study area are showed in figures I to V.

*Participation of Women in Cassava Processing*

Table 3 shows distribution of respondents by the women processors surveyed in the study area of their participation in cassava processing. Most (89.9%) of the women cassava processors confirmed their participation in cassava processing activities. The results of the study showed educational level of majority (58.90%) of women processors fell under non-formal education which might have considerable influence on their choice of methods of processing. Direct effect of this was to impair processors' judgment in the choice of optimum combination of inputs while indirect effect had been disallowing processors to obtain access to information pertaining to their choice of optimum combination. Orivel, 1983, described educated farmers as more active than others in seeking information, particularly such information as they could obtain from extension services. Harker (1973) reported that educated farmers were more active in seeking additional knowledge. However, Agbamu et. al, (1996) found that a farmer who had formal education but had no adequate knowledge of a recommended farm practice, was not likely to adopt it.

*Processing Experience by Women Processors in the Study Area*

Table 4 shows the years of women cassava processors in DLGA. The results of the study showed that women with less than five years of experience topped the list of the participants with 31.5 percent, while participants within six to ten years bracket ranked second with 28.8 percent. Women participants within 11 and 15 years bracket in years of processing experience constituted 16.4 percent of the respondents. About 23.3 percent of the women surveyed in the study area were involved in the activities of cassava processing. The finding from the study inferred that cassava processing activities not only required considerable years of experience but appeared to be an attractive source of income generation for illiterate rural women in DLGA. Nweke (1994) reported that 70.0 percent of total cassava production in Africa was consumed in various processed forms locally which were convenient to prepare and comparatively easy to store and transport, enhances quality and marketing extent.

*Availability of Modern Cassava Processing Recommendation*

Most (78.1%) of the respondents from the study area claimed non-existence of modern processing recommendations while 21.9 percent shared contrary views (Table 5). About 84.9 percent of the cassava processors affirmed that whatever was available as modern processing recommendations, was not relevant to solving their processing problems. Results of the study showed that women processing cassava in the study area had no knowledge of modern processing recommendations. Granpat and Seepersad (1996) were of the view that any adoption of new technology must be accompanied by farmers' knowledge about it. Also 34.1 and 21.9 percent of women processors affirmed that knowledge acquired on their cassava processing activities was from family business and neighbours respectively. Such knowledge could be described as know-how needed to transfer skills within a pool and to permit others incorporate such knowledge into their business activities. In the same vein, 30.1 percent of the respondents claimed acquiring their knowledge on processing of cassava through the extension agents.

The finding inferred that absence of modern processing technology from the study area allowed rural women in DLGA rely on their traditional knowledge within their community to undertake their cassava processing activities. According to IITA (2004) such traditional methods were time consuming, provide low yields and lacked storage capabilities. Natesan (1984) related availability of suitable messages appropriate to the physical and the socio-economic conditions of the farmers were of fundamental importance. However, such suitable messages were to be the responsibilities of the research system for the creation of new information from which a new technology emerged. Also Idachaba (1980) described linkages between research and extension as imperative; without this two-way link the latter quickly ran out of material to extend while the former, lacking field feedback, progressed to more academic and less relevant research work.

## Conclusion and Recommendations

*Conclusion*

Results of the study showed that small-scale (household) women cassava processors in the study area relied

 

mostly on traditional methods or low level technology for their operations. Traditional methods of cassava processing were found to be labourious, time consuming, provide low yield and lacked storage capabilities. Availability of relevant modern processing technologies to improve on the level of existing traditional methods in the study area was non-existent.

**Recommendation**

To enable women cassava processors realize higher benefit from their activities, relevant authority should liase with researchers to develop appropriate processing technologies to suit local conditions and to satisfy the literacy levels of the respondents. Improved technology developed by researcher should ensure better quality of cassava products and to produce more food varieties from the crop, reduce the labour and time involved in processing and minimizing cost of processing.

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**Table 1: socio-economic characteristics of women cassava processors**

| Characteristics | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| Under 25 years | 7 | 9.60 |
| 26 – 35 years | 28 | 38.40 |
| 36 – 45 years | 30 | 41.10 |
| 46 and older | 8 | 11.00 |
| **Educational Level** | | |
| Non-formal | 43 | 58.90 |
| Primary School Completed | 10 | 13.70 |
| Secondary School Completed | 16 | 21.90 |
| Post-Secondary School Completed | 1 | 1.40 |
| Adult Education | 3 | 4.10 |
| **Material Status** | | |
| Single | 3 | 4.10 |
| Married | 62 | 85.00 |
| Divorced | 2 | 2.70 |
| Widow | 6 | 8.20 |
| **Family Size** | | |
| 1 – 5 | 28 | 38.36 |
| 6 – 10 | 29 | 39.73 |
| 11 – 15 | 12 | 16.44 |
| 16 – 20 | 4 | 5.48 |
| **Annual Income (N)*** | | |
| Below 5,000 | 7 | 9.59 |
| 5,000 – 10,000 | 19 | 26.03 |
| 10,000 – 15,000 | 12 | 16.44 |
| 15,000 and above | 35 | 47.95 |

Source: Field Survey, 2012
*Nigerian Naira

**TABLE 2: DISTRIBUTION OF RESPONDENTS IN ACCORDANCE WITH CASSAVA PROCESSING METHOD USED**

| Processing Method Used | Frequency | Percentage |
|---|---|---|
| Indigenous | 68 | 93.2 |
| Modern | 5 | 6.8 |

Source: Field Survey, 2012

**TABLE 3: PARTICIPATION IN CASSAVA PROCESSING**

| Response | Frequency | Percentage |
|---|---|---|
| Yes | 65 | 89.0 |
| No | 8 | 11.0 |

Source: Field Survey, 2010

**TABLE 4: PROCESSING EXPERIENCE BY WOMEN PROCESSORS**

| Experience | Frequency | Percentage |
|---|---|---|
| Under 5 years | 23 | 31.5 |
| 6 – 10 years | 21 | 28.8 |
| 11 – 15 years | 12 | 16.4 |
| 15 years and above | 17 | 23.3 |

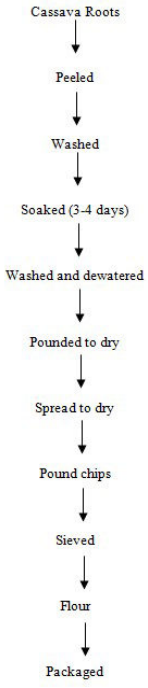
Source: Field Survey, 2012

**TABLE 5: DISTRIBUTION OF WOMEN BASED ON THEIR VIEWS OF MODERN CASSAVA PROCESSING METHODS**

| Item | Responses | Frequency | Percentage |
|---|---|---|---|
| Availability of modern Cassava Processing methods | Yes | 16 | 21.9 |
| | No | 57 | 78.1 |
| Relevance of Modern Cassava Processing methods | Yes | 11 | 15.1 |
| | No | 62 | 84.9 |
| Sources of modern cassava processing | | | |
| Ext. agents | 22 | 30.1 | |
| Family business | 16 | 21.9 | |
| Mass media | | 7 | 9.6 |
| Neighbours | | 25 | 34.2 |
| None | | 3 | 4.1 |

Source: Field Survey, 2012

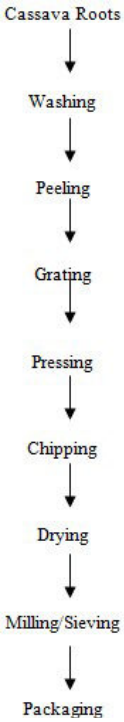
**FIGURE I**




**Flow Chart for indigenous cassava flour processing**
Source: Field Survey, 2012

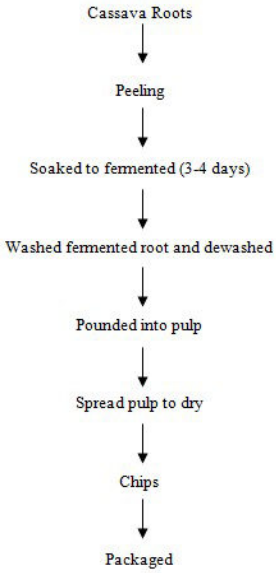
 

**FIGURE II**




**Flow Chart for improved method of unfermented cassava flour processing.**
Source: Field Survey, 2012

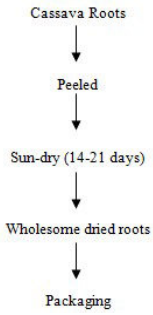
**FIGURE III**




**Flow Chart for indigenous cassava chip processing**
Source: Field Survey, 2012

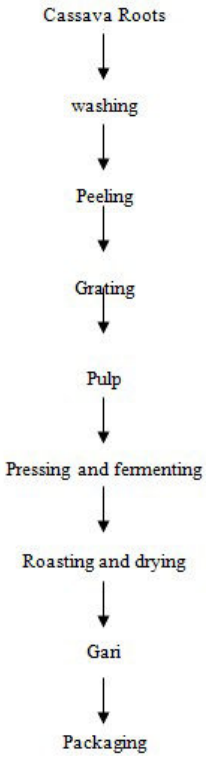
 

**FIGURE IV**




**Flow Chart for indigenous wholesome cassava**
Source: Field Survey, 2012

**FIGURE V**




**Flow Chart for indigenous Gari processing.**
Source: Field Survey, 2012.

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