



## INCOME GENERATION AMONG WOMEN ON TURMERIC CLOVES SPICE PROCESSING IN ADAMAWA STATE, NIGERIA

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### Abstract

The study focused on income generation among women in Adamawa state, Nigeria. The specific objectives was to describe the socio-economic characteristics of respondents on turmeric-cloves spice processing, examine the awareness of the respondents and identify the constraints encountered by the respondents on turmeric-cloves spice processing. A sample of 120 respondents was selected using a multi-stage sampling. Data were collected using a well-structured questionnaire. Descriptive statistics such as frequencies, percentages and mean scores were used to analysed objectives, I, II and III of the study. Research findings revealed that the mean age of the respondents was 38.30years, majority of the respondents (76.7%) were married, (39.2%), (26.7%), (17.5%) had secondary, tertiary and primary education. The mean household size was 5.48 person. The findings also revealed that (54.2%) of the total respondents were not aware of turmeric-cloves spice processing in the study area. The study showed (33.3%) which constitute the majority of the respondents that lack of processing facilities was their major constraint encountered with turmeric-cloves spice processing. Based on the findings of the research it was recommended that more older women groups should be encouraged to participate in turmeric-cloves spice processing so as to generate income to cater for their family needs, more extension officers/agents should be recruited and trained by the state and federal government so as to help in the dissemination of information on improved technologies to the women groups or farmers.

**Keywords:** Promotion, Turmeric, Cloves, Processing, Income, Generation

### INTRODUCTION

Turmeric (*Curcuma longa*) also known as 'golden spice of life' is a bright yellow aromatic powder derived from the rhizome of a plant, which is a member of the ginger family. Turmeric has long been recognized for its medicinal properties such as anti-inflammatory, anti-cancer, anti-bacteria, anti-fungal and has gained the attention of both the medical and scientific world, apart from its culinary uses (Laguipo, 2017).

Turmeric is a tropical perennial plant a native to India and Indonesia that is cultivated throughout South-East Asia, China, Australia, and the South

Pacific. Though it is produced in Nigeria, but its production is insignificant in the international market. Most of the production is in home steads, and gardens and from about 19 States of the Federation (Olojede, Ano, Nwakocha, Akinpelu, Ocheri, Nwaneri and Ahyaku, 2011). The plant grows to a height of about 0.9-1.5metres tall and bears large oblong leaves centrally funnel-shaped, dull-yellow flowers, thick rhizomes which are yellowish on the outside and deep orange or reddish brown inside. The lateral rhizomes contain more yellow coloring than the bulb (Nwaekpe, Anyaegbunam, and Okoye (2015).

Clove (*Syzygium aromaticum*) a precious spice, is a member of *Mirtaceae* family which has been employed for centuries as food preservative and medicinal because of its antimicrobial and antioxidant properties. *Syzygium* is the largest genus of *Mirtaceae* family, comprising of about 1200 to 1800 species of flowering plants which are widely distributed in tropical and subtropical areas of Asia, Africa, Madagascar, and throughout Pacific and Oceanic regions (Hussain, Rahman, Mushtaq and El Zerey-Belakri, 2017).

According to Hussain *et al.*, (2017), cloves contain appreciable amounts of volatile oil (used for flavoring foods and pharmaceuticals), which is mainly confined in aerial parts of the plant. The yield and composition of volatile oil are variable and are thought to be linked to growing conditions, genetic factors, different chemotypes, geographic origins, and differences in the nutritional status of plant. Cloves possess antibacterial potential and is used in a variety of mouth washes, dental creams, throat sprays, and tooth pastes to kill pathogens. It is also used to relieve sore gums. Mixture of eugenol (major bioactive constituent of clove) and zinc oxide is used for short-term filling of dental cavities. Clove oil improves body defense system and help to fight against invading microbes. It is also used to cure Onychomycosis and Athlete's foot disease. Inhalation of clove essential oil soothes various respiratory conditions such as asthma, cold, cough, sinusitis, bronchitis and a hosts of other diseases (Hussain *et al.*, 2017).

According to Tadimalla (2020), cloves possess many medicinal properties and have several benefits. From fighting inflammatory diseases to helping treat acne, this spice can improve human health in various ways. Including cloves in your diet is simple and may help to enhance the flavor of dishes. However, be wary of the adverse effects if you are on medications, pregnant or lactating, consult your doctor before taking cloves (Tadimalla, 2020).

Devi (2015), explained that the process of value addition to the agriculture product by various methods like grading, sorting, washing, slicing, curing, drying, grinding, sieving and packaging is known as "Food Processing". In other words,

it is a technique of manufacturing and preserving food substances in an effective manner with a view to enhance their shelf life; improve quality as well as to make it more useful. It covers a wide range of products from sub-sectors comprising agriculture, horticulture, plantation, animal husbandry and fisheries.

According to Etudaiye, Ukpabiu, Chukwuma and Ojojede (2012), usually fresh Turmeric rhizomes and cloves are harvested, washed, clean and taken to the market to be sold without processing. This has resulted in losses to the producers, as turmeric is a semi-perishable crop with moisture content of greater than 55%. Therefore, there is the need to train women on how to process turmeric-clove into spice so as to avoid this huge losses and to generate income that will improve their living standards. The training will enable them acquire the necessary skills and knowledge in processing turmeric-clove spice so as to earn income and improve their livelihood. Just like other agricultural crops, turmeric-clove processing are normally done by women in the household although sometimes non household members including children are paid to do the work. Women are key to its processing because rural women usually engage themselves in divers' income-generating activities to meet household needs and improve their standard of living. This is in line with the views of Agricultural and Rural Management Training Institute (2011) which states that rural women consciously or unconsciously involve themselves in other activities such as processing of spices in addition to farming to ensure they generate more income and improve their livelihood.

### Statement of the Problem

Turmeric and cloves are mostly produced on subsistence basis due to inadequate awareness on its potentials and uses; however, there is need for increased production and processing to other forms for easy handling and usage and to meet the global demand. In Northern part of Nigeria, the potentials of these important spices, medicinal and coloring herbaceous plants has not been fully tapped despite favorable soil and climatic conditions for its production.

Therefore, there is the need to increase its production and add value through processing the spices (Olojede *et al.*, 2011).

According to Anne, (2014), India is the global leader in value added spices products and exports. If well-handled and processed, turmeric and cloves spice could serve as one of the major source of foreign exchange in Nigeria, especially women who are economically backward can easily be self-employed and generate income for economic benefits of the family. Under-utilization of turmeric and clove in Nigeria is largely due to lack of awareness of the nutritional and health benefits, and as such it is necessary to embark on an enlightenment and promotional campaign especially the producing States (Mbanaso, Akinpelu and Nwokocha, 2012). Since women are economically backward in rural areas, there is the need to empower them through processing of turmeric-clove spice as source of income generation to improve their standard of living.

### Objectives of the Study

The broad objective of the study is to Promote Turmeric-Clove Spice processing for income generation among women in Adamawa State, Nigeria. The specific objectives are to:

- i. describe the socio-economic characteristics of women in Turmeric- Clove Spice processing in the study area;
- ii. determine the awareness on Turmeric- Clove Spice processing among women in the study area;
- iii. Identify constraints encountered in Turmeric-Cloves Spice processing.

## METHODOLOGY

### Research Design

The research design used for this study was survey study which made use of research questionnaire and interview techniques to collect data for the study.

### The Study Area

The study area is Adamawa State, and it lies between latitude  $7^{\circ} 28' N$  and  $10^{\circ} 55' N$  of the Equator and longitude  $11^{\circ} 30' E$  and  $13^{\circ} 45' E$  of the Greenwich Meridian. It shares a common

boundary to the East with Republic of Cameroon; to the North with Borno State; to the West with Gombe State, and to the South with Taraba State (Adebayo, 1997). The Study area has an estimated population of about 3,168,101 peoples (NPC, 2006) projected to 4,558,580 persons in 2020 using the World Bank annual population growth rate for Nigeria (World Bank, 2020), and land mass of about 36,917km<sup>2</sup>. The mean annual rainfall ranges from 700mm in the North West to 1600mm in the South East. The mean annual rainfall is less than 1000mm in the Central and North Western part of the State (Adebayo, 1997). The State is characterized with mean temperature of  $26.7^{\circ}C$  to  $27.82^{\circ}C$ . The area lies within the guinea savannah climatic zone of Nigeria with distinct dry and rainy seasons. The rainy season commences in April and ends in October, while the dry season starts in November and ends in April. The state has four (4) Agricultural zones which are, Mayo-Belwa, Gombi, Guyuk and Mubi respectively. Majority of the people are farmers, cultivating different variety of crops and rearing of animals. The major crops of economic importance in the State include maize, millet, sorghum, rice, yam, cowpea, cotton and groundnut.

### Population and Sample Size Selection

The population of the study consisted of all women groups interested in turmeric-cloves spice processing within the study area. Multi stage sampling techniques was employed in selecting the group respondents. In the first stage all the four Agricultural zones of Adamawa State were considered. Zone 1: Madagali, Michika, Mubi North, Mubi South and Maiha Local Government Areas (LGAs) Zone 2: Hong, Gombi, Song and Girei LGAs Zone 3: Fufure, Ganye, Jada, Mayo-Belwa, Toungo, Yola North and Yola South LGAs Zone 4: Demsa, Guyuk, Lamurde, Numar, and Shelleng LGAs. The second stage involved the purposive selection of one Local Government Area from each ADP zone based on their prominence in turmeric-cloves spice processing. The selected Local Government Areas include, Mubi North, Song, Ganye and Demsa. In the third stage, two popular communities each of the four Local

Government Areas were purposively selected based on their prominence in turmeric- cloves spice processing. The selected communities include: Kolere and Mubi from Mubi North Local Government, Dumne and Song from Song Local Government, Sugu and Ganye from Ganye Local Government, Dwam and Dilli from Demsa Local Government. The fourth stage was the selection of 120 women proportionate to their population in the eight selected communities and were used for the study

### Data Collection

The data for this study was collected from primary source collected from women groups who are processors of Turmeric- Clove spice using questionnaire and supplemented with oral interview.

### Analytical Technique

The analytical tools employed include descriptive statistics such as percentages, frequency and mean scores was used to analyzed objectives I, II and III.

## RESULTS AND DISCUSSION

### S O C I O - E C O N O M I C C H A R A C T E R I S T I C S O F T H E R E S P O N D E N T S

The 120 respondents were served with a well-structured questionnaire that obtained information on their socio-economic characteristics as discussed below;

Table 1: findings revealed that the age bracket with the highest proportion of respondents (35.0%) was between 30-36years, (30.0%) were between 37-42years, (14.2%) were between the age bracket of 44-50years, (10.8%) of the respondents aged 23-29years and (10.0%) were between 51-57years of age respectively. Age is

considered as a very important factor in agriculture as it is useful in taking risk, decision making and adoption of innovation and technology. Young people tend to take risk, easily adopt innovation and technology withstand stress which leads to increase in output (Adeola, 2010).

Majority of the respondents (76.7%) were married, (16.7%) single, (4.2%) were divorced while (2.5%) of the respondents were widow married people in the society were perceived as more responsible. The respondents of the study constitute (100%) females that were engaged in processing turmeric-cloves spices as a source of generating income in the study area.

The analysis of the highest educational level of the respondents revealed that (39.2%) had secondary education, (26.7%) completed tertiary education, (16.7%) no formal education, (17.5%) had primary education. This result showed that most of the respondents in the study area are literate. This is in line with Murtala et al (2015) which states that education plays an important role in adoption of innovations and processing of agricultural produces.

Household sizes of the respondents revealed that (45.0%) had a family size of 5-8 members, (40.0%) had between 1-4 members, (11.7%) had 9-12 members while (3.3%) had family size of 13-16 members in the study areas. The implication of the results is that, the larger the family size the more labour available and the more income requirement to meet family needs. This agrees with Banmeke and Omoregbee (2009), which observed that large household size serves as an important source of farm labour supply and a strong base to adapt improved technologies as to be able to improve productivity in order to meet up with the needs of the family.

**Table 4.1.1:** Socio-Economic characteristics of respondents (n = 120)

<b>Socio-Economic characteristics</b>	<b>Frequency</b>	<b>Percentage %</b>	<b>Mean</b>
<b>Age(Years)</b>	13	10.8	38.30
23-29	42	35.0	
30-36	36	30.0	
37-43	17	14.2	
44-50	12	10.0	
51-57			
<b>Marital Status</b>	20	16.7	
Single	92	76.7	
Married	5	4.2	
Divorced	3	2.5	
Widow			
<b>Sex</b>	120	100.0	
Female			
<b>Level of Education</b>	20	16.7	
No formal education	21	17.5	
Primary education	47	39.2	
Secondary education	32	26.7	
Tertiary education			
<b>Household Size</b>	48	40.0	5.48
1-4	54	45.0	
5-8	14	11.7	
9-12	4	3.3	
13-16			

Source: Field Survey, 2025

Table 4.1.2: below revealed that majority of the respondents (54.2%) were not aware of turmeric-clove spice processing in the area, only (45.8%) of them were aware of turmeric-clove spice processing. This implies that information on the processing the turmeric-clove spice had not reached the majority of the women in the study area. This result is in

agreement with Alhaji (2018) who found that (95.5%) were not aware of the processing technology introduced to the respondents. This confirms the statement of Mbanaso *et. al* (2012) that the underutilization of turmeric-clove is largely due to lack of awareness.

**Table 4.1.2:** Awareness of respondents on processing Turmeric cloves spice

<b>Awareness</b>	<b>Frequency</b>	<b>Percentage%</b>
No	65	54.2
Yes	55	45.8
<b>Total</b>	<b>120</b>	<b>100</b>

Source: Field Survey, 2025

The result in table 4.1.3 revealed that majority (33.3%) of the respondents showed that lack of processing facilities was their major constraint, (20.8%) highlighted the problem of fluctuation in market prices, (16.7%) lack of packaging material, (15.0%) and (14.2%) showed drying

techniques applied as well time consuming as their challenges respectively. This implies that the women are faced with one challenge or the other which at the end has negative impact on the participation processes.

**Table 4.1.3:** Constraints encountered by women in processing Turmeric-clove spices

1.	Lack of processing facilities	40	33.3
2.	Time consuming	17	14.2
3.	Lack of packaging materials	20	16.7
4.	Fluctuation in market prices	25	20.8
5.	Drying techniques applied	18	15.0
<b>Total</b>	<b>120</b>		<b>100</b>

Source: Field Survey, 2025

## CONCLUSION

Research findings revealed the population of (100%) women processors, the results also showed that the respondents were in their active and productive age group, the mean age of the respondent was 38.30years, the mean household size was 5.48 persons. Majority of the respondents (76.7%) were married, (39.2%), (26.7%), (17.5%) had secondary, tertiary and primary education. The findings also revealed that (54.2%) of the total respondents were not aware of turmeric-cloves spice processing in the study area. The study showed (33.3%) which constitutes the majority of the respondent showed that lack of processing facilities was their major constraint encountered with turmeric-cloves spice processing.

## RECOMMENDATIONS

Based on the findings and conclusion of the study, the following recommendations are hereby made:

- Older women group should be

encouraged by government/NGO in turmeric-cloves spice processing so as to generate income to cater for their family needs. This is because most of the agricultural activities that are dominated by women groups is crop processing and marketing.

- More extension officers/agents should be recruited and trained by the state and federal government so as to help in the area of information dissemination on improved technologies to the women farmers.
- Modern/improved technologies for turmeric-clove spice processing and other related ingredients that were difficult to obtain should be made available to encourage the women processors by the government so as to ease their accessibility.

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